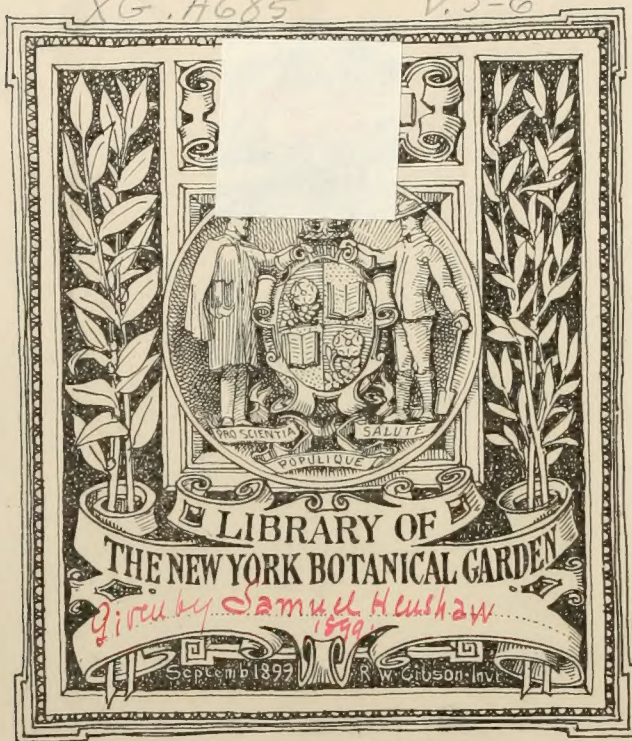




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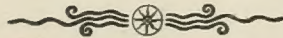
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THE "CHINESE" CYPRESS AT DOSORIS.

Trees and Shrubs.

THE SMALL-LEAVED OR "CHINESE" CYPRESS.

This tree is a variety of our common bald cypress (*Taxodium distichum*) of the southern states and one of the hardiest of our hardy coniferous trees. Botanically it is generally known under the name of *Glyptostrobus pendulus*, but its proper name is *Taxodium distichum* var. *microphyllum*, and its garden name of "Chinese" cypress is, probably, a misnomer, as it is nothing more or less than a variety of our bald cypress; in fact, seedlings raised from seed of it are mostly the plain *Taxodium distichum*. In a garden sense, however, it is a distinct and desirable tree of tall, straight, columnar form, and we can make good use of it in various ways in planting. Ordinarily it is slow growing, much more so than the plain cypress, still it soon rolls up foot upon foot and becomes a tree 20 to 30 or more feet high, and it is easy to transplant. Our illustration is engraved from a photograph taken of one at Boscoris a couple of years ago, and is a very truthful representation of this tree.

We never before appreciated the value of these cypresses, that is the different forms of the deciduous cypress, so much as we do now, for we find many large trees of them in Pittsburg, and they are by far healthier and bigger than any other conifers of any kind that we have seen in or about this city. Although indigenous in wet swamps they thrive admirably in our dry clay lands, and resist the evil effects of the poisonous murky atmosphere. The glyptostrobus in particular bursts into leaf very late in spring, and some urge this as an objection to its use in planting, but we don't, we rather like it, it incites interest and gives us variety. A very graceful and rapid growing tree is the weeping deciduous cypress *Taxodium distichum* var. *pendulum*; in its young state it is quite pendulous, but as it advances in years it loses this drooping form largely and becomes a good deal like a plain cypress.

SELECT TREES AND SHRUBS FOR THE MIDDLE SECTIONS OF THE SOUTHERN STATES.

TWELVE BEST DECIDUOUS HARDY FLOWERING SHRUBS.

Althaea frutex or Ros. of Sharon—The new dwarf growing varieties lately introduced from Europe are exceedingly valuable, both in the profusion of their blooming qualities and the variety of their colors, which include white, pink, purple, blue, red, violet, etc. Some flowers are variegated, others mottled, etc., and give a succession of bloom from May until September.

Calycanthus præcox—a Japanese variety of the well known sweet shrub. Flowers yellowish white with a delightful hyacinth fragrance; blooms very early in March.

Caryopteris Mastacanthus, or shrubby verberna. Why called blue spiræa is a puzzle, as it has no affinity with the latter class of plants. It is an exceedingly handsome shrub during September and until frost. The flowers resemble those of the chaste tree (*Vitex agnus-castus*) but of a brighter azure blue, and fragrant.

Chilopsis linearis or Texan flowering willow is a tall growing shrub with linear leaves and flowers in terminal racemes. Each flower is composed of a corolla-like tube divided at the end into five nicely crimped lobes; the tube is lilac in the typical variety, and the end of the corolla mottled deep lilac, with two yellow

low stripes in the center of tube. The flowers resemble somewhat those of the snapdragon and the tree may not inappropriately be called "Tree Snap Dragon." The flowers are produced in the greatest profusion as early as May, and successive crops of them follow during summer and until autumn. There are several varieties lately introduced, such as *C. linearis alba* with pure white flowers, *C. linearis lilacina*, with white tubes and lilac lobes.

Cydonia (*Pyrus*) *Japonica* (Japan quince). We have now a large range of colors in this old favorite early spring blooming shrub. The common red flowering variety is seen in almost every old garden, but the newer sorts are not as well known as they should be. Among the twenty or more varieties the following are the most conspicuous: *Candida*, white; *cardinalis*, vivid red; *rubra plena*, double red, *macrocarpa*, a pale pink and bears a large fruit much esteemed for jellies; *rosea plena*, double pink; *umbilicata*, pale flesh and valuable for its profusion of fruit; *Maulei*, deep orange, and *Simonii*, dark crimson. Some of these varieties bloom during a period of six weeks and the fruit bearing sorts are exceedingly handsome when laden with their wax-like fruit during fall.

Deutzias are among our desirable early spring flowering bulbs. *D. Fortunei* is the best single white, *Pride of Rochester* and *crenata fl. pl. alba* are the best double ones. Their period of blooming is during the latter half of March and until middle of April.

Exochorda grandiflora is a handsome shrub from northern China, and when it is covered with a myriad of pure white flowers during April it stands preeminent among spring bloomers.

Lagerstroemia Indica (crape myrtle) is a magnificent tall shrub or small tree that has become naturalized throughout many sections of the southern states where it has found congenial conditions of soil and climate. Dense thickets are often met with in abandoned settlements and this shrub has become so common that its great value for ornamental planting seems to be ignored. The smooth glossy bark of the tree makes it a conspicuous one when denuded of foliage, but when covered with dense masses of blooms there is nothing that surpasses it in beauty. The flowers are nicely crimped, which gives them the name of "Crape myrtle," but why myrtle to explain an anomaly difficult to explain. The colors usually found vary from a pale pink to a light purple pink, but the newer sorts, such as white and dark crimson are surprisingly beautiful. What a wealth of material for the landscape architect in using the variously colored varieties for grouping. The flowering period extends from June until September.

Spiræa.—Here we have the choice of varieties beginning to show their flowers as early as February during mild winters and of others which continue in constant bloom during summer and until cut off by the frost. All the spring blooming sorts yield white flowers, beginning with *S. prunifolia* or Ladies' Wreath, and followed by the double *Reevesii*. *S. Thunbergii* is extensively used for low growing ledges; it also blooms very early. The best summer flowering sorts are the sub-varieties of *callosa*, such as *alba*, *rosea*, *Bumalda* and *atrosanguinea*, and of the thyrsoid section, *Billardii*, *paniculata rosea*, and *Fortenaysii* give a continuous crop of flowers.

All the above mentioned shrubs require no special methods of cultivation, any good garden soil will give good results, and besides this they are able to with-

stand our warmest as well as coldest weather.

Punica or pomegranates. The double flowering varieties, such as red, white and variegated (*Legrellii*) are very handsome shrubs for the middle sections of the south. They need protection north of Atlanta.

Hydrangea.—If planted in partially shaded places as on the north side of a building and given a rich soil we question if there are more desirable plants than Thomas Hogg, ramis pictis and Otaksa when in their profusion of bloom during May to July.

Hydrangea paniculata is also an excellent plant for more exposed situations but is at its best in a rich and somewhat moist soil.

P. J. BERCKMANS.

Fruitlands, Augusta, Ga.

WANTS A CHOICE SMALL TREE.

Allredge, Salt Lake City, writes: "I have a spot in my small lot where I would like to have a very choice small tree (not over 20 or 25 feet high at maturity), and would like you to help me to make a choice. I already have the weeping birch, *Prunus pissardii*, golden hop tree, Ginnala maple, dwarf red maple and halesia, so would not care to use either of them. How about the kolreuteria, Van Houtte's dwarf horse chestnut, Paul's thorn, large double-flowering almond or the English corkbark maple? Or would the maple *colchicum rubrum* be hardy here? Or some of the hybrid magnolias?"

Ans. The kolreuteria would probably suit you admirably. We would try *Magnolia hypoleuca* because of its beauty and fragrant blossoms; true it will in time grow bigger than that, but when it gets to be 25 feet high you'll cut its neighbors down so that it may stand. The hybrid *Magnolia soulangeana* would be good, and so would *Pyrus malus floribunda* or *Pyrus parkmannii*. Colchicum maple is good looking enough in form, size, and foliage, but like other maples its flowers are not showy. If Paul's thorn thrives in your neighborhood, it in time is a beauty. The others named by you should be hardy with you.

HYDRANGÆA PANICULATA GRANDIFLORA.

This handsome hydrangea is now a favorite shrub in many gardens. The flower heads are composed of numerous, small star-shaped flowers intermixed with generally more numerous sterile ones, the latter about one inch in diameter. These are the ones we see unless upon close examination, and produce the general effect. The plant is perfectly hardy and will stand considerable abuse, but it responds so cheerfully to good treatment that it is a shame not to grant it. When planted it should be cut back on the past season's growth so as to leave only two eyes on the old wood, and each spring the same cutting back is advisable. Should one desire very large flower heads examine the shrub early in July and cut out all thin weak shoots, so as to allow full strength to the more vigorous ones, and as the bloom heads appear, give the plant diluted manure water once a week. Like nearly all Japanese plants it is fond of moisture. If large bushes are desired, cut back only one-third of last year's growth. To produce a standard plant three to four feet high, take a strong plant, place it in rich soil, cut it down to the roots, and allow only one stem to grow, staking it firmly to carry it up straight, and force it all you can as this one year's growth determines



HYDRANGEA PANICULATA GRANDIFLORA AT EGANDALE

the height of your standard. When winter comes place manure around the roots thickly, not so much for protection as to enrich the soil.

For many years after commencing a bed with young plants *Lilium umbellatum* can be grown between them with effect. Plant the hydrangeas four feet apart, and run lines of this lily in between them, making small groups in the more open space. The lilies come up and bloom before the hydrangeas interfere with them. When through blooming cut back the lily stems a little, and the branches of the shrubs soon hide them. This lily is hardy and stands this treatment well. Hydrangea blooms cut about September 20 and hung head down on a line, in some dry place, make fine winter bouquets. Make two cuttings, say ten days apart, as they may not be 'just right' the first time; strip off the leaves from the stem before drying. W. C. EGAN.

QUESTIONS ABOUT TREES AND SHRUBS.

Please answer the following queries and much oblige C. H., Roxbury, Mass.

LARGE SHRUBS IN FRONT OF TREES.—"Will you please name some large growing shrubs, or small trees of low branching habit, that would be likely to grow about fifteen feet, to the south east of some large trees, (a sycamore maple, black walnut, and tulip). They would get the morning sun; soil is pretty dry. They could have an occasional watering."

Ans. Lots of them will grow there but it depends upon the treatment you give them how well or how long they will grow there. You know most all big trees are great robbers and send out their roots in search of food and moisture far and near, even to the spots occupied by your nearby large shrubs, the latter starving in proportion. Dig the ground three feet deep, remove the poor soil and replace it with good earth, and in summer time instead of an occasional watering give thorough soakings. The flowering dogwood, shadbush, black haw, koeleruteria,

scarlet fruited thorn, cockspur thorn, bird cherry, large-flowered mock orange, single flowered althæas, high bush cranberry, lilacs, and others will thrive there well enough.

NOTES ON YUCCAS.

The superb picture of *Yucca Trecaleana* and Mr. Berckman's notes on yuccas in your issue of September 1, interested me greatly. Mr. Berckmans suggests that owing to its robust character *Yucca Trecaleana* can doubtless be cultivated farther north than any species of the arborescent type. I trust this may be so and will try it. *Yucca aloifolia*, which he describes as the hardiest of the arborescent species has not proved so with us on first trial, but another one is about to be made. The only arborescent yucca hardy here is *gloriosa*, and this is perfectly so. It has been incultivation about this city for at least ten years to my knowledge, and it has never been winter killed or injured. It is peculiar in its late flowering habit. The panicle does not make an appearance until some time in September, and progresses so slowly that freezing weather has always overtaken it before the first flowers expand. This behaviour puzzles me, as I have seen it in England flowering profusely in midsummer. *Yucca aloifolia* has not stood our winters so far, but another trial shall be given it. What it wants is no doubt, protection for a year or two until the roots are well down in the soil. May I add my thanks for the splendid number you gave us in the issue of September 1 just received? It is beautiful and instructive from beginning to end. J. MEEHAN.

Philadelphia.

YUCCA TRECALEANA IS HARDY IN THE CAROLINAS—Prof. Massey of Raleigh writes: "I have a fine clump of *Yucca Trecaleana* on my lawn that has passed through the severe winters of 1893 and 1894; the lowest point reached here was 4° above zero, our usual lowest is about

18° above. This yucca bloomed in Raleigh yards this summer, but mine has not yet flowered. One plant of it that the owner carefully stripped of the ripe leaves that hung around the stem was cut to the ground by the cold of '93, while plants where the old leaves were allowed to remain undisturbed survived."

The Flower Garden.

PLANTS IN BLOOM SEPTEMBER 8.

Although it is now well into September and the nights are quite cold, the garden is quite gay with flowers. Most of the early sown annuals are past, but the later sown ones are still quite good. Among the showiest things we have in flower are the speciosum lilies. What a nice show they make when grown in large clumps! This lily is easy to manage and sure to grow and quite hardy. *L. Leichtlinii* is still giving a few flowers, and it comes in when most other lilies are past. The Japanese anemones are in fine blossom and they have bloomed a good deal earlier this year than they did last season. They were just opening their first flowers last year when they were cut with frost, but we will have most of the flowers open by that time this year. These anemones are very fine for cutting and they last quite well in water.

The cosmos are giving us lots of flowers; they are earlier this year than last, when they did not open their flowers till the 25th of September and just about that time they were cut with frost.

Delphiniums from seed this spring are now in bloom, and what a fine strain of them we have! The seed was got from Lemoine of France; it pays to get the best seed for then you are sure to get something good.

The goldenrods are making quite a show now. Grow a few varieties of them and plant them in some shady nook.

The zinnias are one of the showiest annuals we have in the garden, and they will continue to be so till cut by frost. The marigolds, both French and African are still good. The China asters are past their best. The hardy perennial asters are in fine form and come in very handy for cut flowers. The miniature sunflower is one of the best of the genus. It comes into flower early in the summer and lasts till frost cuts it.

Begonia Vernon, both red, pink and white is flowering nicely. Some of our plants are giving us flowers as large as some of the tuberous begonias. We are to grow a great many of them next year. *Rudbeckia speciosa* is still in good flower; it has been in bloom mostly all summer and is quite showy. The dahlias are now at their best; they have grown very rank, caused by having so much rain. The annual gaillardias are in fine flower; they bloomed well all summer. The perennial phloxes are now giving a good second crop of flowers. The plants have got too large and we have marked all of the best ones and will divide them up next spring. Phloxes should be divided up and replanted about every three or four years. A stock of them is easily got up in this way.

Sedum spectabile is a fine perennial; it comes into bloom so late in the season. Although sweet alyssum rotted out badly with the late heavy rains it started to grow again and is now in one mass of flower. Hollyhocks planted last spring are in flower, but we are much troubled with that leaf disease, and when the leaves are all marked up so it detracts from the beauty of the plants. *Zinnia Haageana* is still in flower, although its blooms are smaller than those of the other zinnias they are more lasting.

The annual chrysanthemums are getting a little ragged, still there is quite a lot of flower on them. The calendulas are much the same; they are past their best, but they will give us fine flower till cut by sharp frost. Petunias are in fine flower and very showy. *Venidium calendulaceum* is in fine flower and quite showy.

Salvia splendens is at its best and what a showy plant it is!

Campanula pyramidalis is also fine. The wet season rotted a good many of them, but we have got a good stock of them from seed and will give them a more exposed place next year. *Clematis paniculata* is in fine flower. We have it grown over the thatched roof of the little cottage, and it does very well there, although it gets a little winter killed on the roof.

Pyrethrum uliginosum is still in good bloom and helps us out greatly. Tuberous ones are beginning to open their flowers; they are not liked by many on account of their strong smell, but we like them and I grow a few of them every year. Pentstemons from seed sown this spring are in good flower and showy. They sometimes prove hardy, but it is well to put in cuttings of the best of them in the fall and winter them in a cold frame. *Helianthus Maximiliani* is beginning to flower and will keep on till frost. A number of other sunflowers are also in flower and help to make the garden gay. The scabiosas are in fine bloom and make nice cut flowers; they bloomed all summer long. *Viola cornuta*, both blue and white is still in full flower; it bloomed all summer, too. Dwarf nasturtiums are in one mass of bloom and they are fine for cutting.

H. P. roses are giving quite a lot of flower; they did not bloom much in the

hot part of summer, but they are now making up for it. The H. P. roses that are giving a few flowers are Mrs. John Laing, Magna Charta, and Captain Christy.

DAVID FRASER.

Mahwah, N. J.

MY GARDEN.

To nothing does Franklin's proverb apply more sharply than gardening: "Experience keeps a dear school, but fools will learn at no other." Instead of buying wisdom with the experience of others I bought it with my own, for experience will make even the obstinate wise. I was ten years learning what I might have learned in two for very much less money. I have therefore respect for the judgment of every grower in trade or for pleasure, and the respect increases in proportion to his skill and experience. I learned that a hardy perennial garden was more interesting and instructive and cost immeasurably less than an annual garden, and that hardy perennial gardening mildly tempered by annual gardening was the wise thing for an amateur of moderate means.

COW MANURE ENRICHETH THE SOIL.

My soil was a fine sand and I made it heavy and rich by the addition of cow manure, and to prevent it drying out I covered every bed with several inches of cow manure spread in the fall, and I prefer fresh to well rotted manure when put on just before winter, as the winter snows and frosts prevent it injuring even such capricious shrubs as rhododendrons.

DAFFODILS.

I planted the edge of beds and all the front openings between herbaceous and shrub plants with daffodils, Von Sion, Emperor, Horsfieldii and, to my mind the most striking, Golden Spur. These adapt themselves splendidly to the situation among other plants and increase, Von Sion the most, Horsfieldii the least. This gives me a line of gold through my garden and is the sunrise of the growing year. The poet's narcissus and crocus in variety I plant by the thousand in the grass, but the mowing of the lawn cuts them down before the bulbs are sufficiently ripened and weakens them, and in spite of everything they die out, but they are now so cheap they should be renewed. A plantation of narcissus in variety should be in every garden, for they are beautiful and such early risers after the long night of the winter.

AZALEAS.

Among the plants that stand highest in my estimation are the azaleas, the native as well as the Ghent and mollis hybrids. The earliest flowering of the natives is also one of the most beautiful, *Vaseyi*; a deep moist soil will force its growth, and while I find it doing splendidly under the trees it grows luxuriantly in the open ground. Its large pink flowers cover it before the foliage appears. *Nudiflora* and *arborescens* are interesting, but *calendulacea*, the "flame flower," is the handsomest of all the native azaleas, while *viscosa* I like for its honey odor and its tall growth. I find all these varieties will bear anything but drouth, and with a liberal dressing of manure and a damp soil some of my plants have made three feet of growth this season. But these native varieties, beautiful as they certainly are, must give way to the aristocratic hybrids, which, to my mind, are equal to the Chinese in abundance of flowers, superior in variety and extent of color and of course more valuable to the amateurs because of their absolute hardi-

ness. Sometimes a severe winter has killed the buds on wood that ripened late, but I have never lost a plant by frost. I prefer the *mollis* species because of its large flower. Their growth is more regular and shapely than the Ghent. I have never detected perfume in the *mollis*, though I believe a few of the Ghents are without it. I am considered an azalea crank, for I have Anthony Waterer's entire collection, and of all kinds have about four hundred plants in my little garden, and from the pace of the increase now in a few years they will over-run me. I nip out the seed pods; cut out weak growth and prune for shape, in fact give them the same care as the rhododendrons.

LILIES.

Among the azaleas as well as among other shrubs I have planted lilies by the thousands. In fact I have strung my garden on a chain of lilies from the coral lily *tenuifolium*, flowering May, to the beautiful *speciosum* flowering September and October. Why is it that all the lilies without color (*auratum* excepted) thrive so with us while the white and fragrant, including *auratum*, deteriorate? As I like abundance of flower I planted lilies too thickly among the azaleas and the lilies killed a number of small plants. I shall clear my azalea beds of all but *auratum* and *longiflorum*. I observed in Mr. Hunnewell's garden the *superbum* was largely planted among rhododendrons, a most suitable situation because of its tall growth. I had one plant ten feet this its second year. My observation is that all the colored lilies, by that I mean *superbum*, *Canadense*, *elegans*, *Martagon*, *Wallacei*, *tigrinum*, *Pomponium*, *monadelphum*, *pardalinum*, grow stronger, taller and more floriferous each year. *Wallacei* distances everything in my garden for "multiplying and replenishing the earth." I planted fifty bulbs last year and there were certainly 300 plants in flower four weeks ago.

KALMIAS.

Of the glory of the rhododendron I have already written. Following the rhododendron, and certainly the handsomest of native shrubs, was a plantation of 200 *Kalmia latifolia*. These were seedlings from Waterer's Nurseries and I planted them in soil from the woods, largely leaf mould, and then put several inches of old manure on the top. Although more than a month "on the road" they flowered finely, many plan sbeing one great white bouquet, and all have made from three to twelve inches of wood. I had planted 100 plants bought from a native nursery, which instead of being seedlings were transplanted from the woods. In spite of the greatest care I lost almost half of them, and have not above five specimens. It is astonishing how rarely you see the *kalmia* in gardens. When established it is much hardier and more easily managed than the rhododendron. It is entirely free from any pest whatever, while the saw-fly has been singularly active this year with my rhododendrons. The *kalmia* flower is to my mind the daintiest of the whole floral kingdom. The foliage is rich and it is less likely to drop it than the rhododendron. All it demands after being properly planted is water.

JAPAN OR KEMPFER'S IRIS.

The most enchanting bed in my garden this year was a hundred plants in nearly the same variety of the Japanese iris. They were imported for me from Japan, as I was determined to get as nearly complete a collection as possible, and they are growing in Japanese mud. I



RUDBECKIA LACINIATA FL PL

dug out the soil two feet and put two feet of oak leaves in the excavation and put good soil on top. I was able to get in 14 or 16 inches of soil as the leaves sunk under the weight of the soil. The leaves held the moisture in the light soil without souring it. The bed was sunk several inches below the surrounding ground, and during and before the time of flowers I kept the soil soaked with water. In this way I got the largest flowers I have ever seen. It is needless to say I put six inches of fresh cow manure on top last fall. I also did what would have killed anything but the iris, covering the bed in the spring with chicken manure. The iris family are all interesting and beautiful and easily grown, but no one ever stood before a well grown bed of *Iris Kœmpferi* in flower without being filled with wonder and admiration.

JAPANESE ANEMONES.

My garden is now preparing for its last effort in hardy perennials. A bed of 200 plants of Japanese anemones is already showing flower, and they will bloom until the frost lays its fatal blight on all outdoor vegetation. I planted them in the light soil of my garden and in a shaded position. They made large plants and many buds, but small and few flowers. They are vigorous looking this year and loaded with buds, and unless they show great improvement over last year I will transplant them to a sunny position and heavy soil.

My garden though but four acres is heavily wooded with forest trees, and I am striving to have the forest and garden.

ANDROMEDA ARBOREA.

I have five small trees of *Andromeda arborea* in flower and the long white honey-scented spikes of flowers with the beautiful tints of young foliage together with the red autumn color make this a very beautiful tree. Why is it not more grown?

PITCHER'S HELIOPSIS.

Let me say a word before closing of *Heliopsis Pitcheriana*. It has been in flower seven weeks without any intimation of tiring and is the most constant piece of yellow in the garden.

The man who undertakes to garden without water and cow manure will find "love's labor lost." JOHN MARRON.
Sewickley, Pa.

GOLDEN GLOW GONEFLOWER.

(*Rudbeckia laciniata flore pleno.*)

This is one of the forms of our western wild plants, belonging to the same genus as our black-eyed Susan, but it has so changed the character of its cone, that it now gives us a most lovely double chrysanthemum-like decorative flower of a pure yellow color, and about three inches in diameter. Some say it looks like a yellow aster of the Semple's branching type. I imagine that this flower will become as popular as the "Dahlia sunflower" (*Helianthus multiflorus plenus*) which it faintly resembles. Where plenty moisture is given it it will grow eight feet high and produce in August on long wiry stems numerous blooms whose reflexed petals make it very effective. It is a splendid keeper when cut. I have not wintered it,

but as the type is extremely hardy, there can be no question regarding it on that point. The photograph herewith sent to you [and from which our illustration has been engraved.—Ed] is that of a plant set out in my garden less than six months ago. W. C. EGAN.

This double-flowered rudbeckia has been repeatedly referred to editorially in GARDENING. Its origin is unknown; what we know of it is this: Two years ago we saw it—one plant—in bloom in Mr. Childs' garden at Floral Park, Long Island, as it was (and still is) the only double-flowering rudbeckia we had ever seen we were much "struck" with and deeply interested in it. Mr. Childs told us he didn't know from whom, where, or how he got it, but presumed it was one of the many plants sent to him now and again by his customers and track of it had been lost. At planting time in spring all miscellaneous plants known and unknown were set out in the garden, it among them, and no more notice was taken of it till it came into bloom and its floral beauty and profusion attracted notice. We got a chip of it, and the way it grew and bloomed at Dosoris was wonderful. It was "sent out" a year ago and has now become quite general in gardens. It is hardy, very free growing, extravagantly profuse as regards blooming, and withal a first-class perennial but in habit a little inclined to coarseness.

NEW GERANIUMS.

If the English do not stop their productions in the round flowering section we shall have no adjectives with which to follow them. We now have two white flowered sorts, Dr. Nansen and Snow Drop, in the line of Cannell's Lily, so long a favorite, but far ahead of it. The salmons are finely represented by Midsummer, Ænone, Florence Farmer and Galatea. The red varieties seem to have reached perfection, both as to size and color, John Forbes and Enid being two of the largest and finest.

From France we had Triomphe de Nancy, a double-flowered crimson-and-white of the Mirande type. Very beautiful, as are the various sorts of the Corona section, where three colors are combined, usually in distinct rings about the center. All the above are grand for pots, or for special uses, but we still have to come back to the Bruant or "sun-proof" section for our bedders; two of the finest of these in pink are Mme. Jaulin, double, and J. D. Cabos, single. Good bedding pinks are always in great demand. In scarlets two of the finest are Ville de Poitiers, double, and W. P. Simmons, single.

A new plant that is bound to prove very useful is *Allamanda Williamsii*, a tender shrub bearing clusters of the most beautiful trumpet-shaped canary flowers; it is very useful in the window or veranda box, being a free bloomer and of nice habit.

In begonias we find two valuable additions in the *Semperflorens Gigantea* class; one of these is elegantissima, a beautiful free flowering pink variety; the other is elegantissima alba, pure white. Any person growing the rosea variety will give a warm welcome to these newcomers.

Every year hundreds of valueless novelties must be discarded in the various classes of plants, but notwithstanding this fact the testing of these new varieties is one of the greatest pleasures of the florist; more and more the selection of the best is being made by the florists,

and only the sound wheat that is left is being passed on for the amateur to try in his turn. S. A. H.

Richmond, Indiana.

THE NEWER SWEET PEAS.

About the newer sweet peas as compared to older varieties of merit. Mr. Eckford's introductions for 1893 and 1894 were almost without exception a great advance on his previous work, and from a personal visit to his floral workshop I can say that he has in store for us yet grander results of his splendid work on this flower. But the sets of novelties which he has sent out for 1895 and 1896 have not ranked well with his best previous introductions.

Take the seven that were offered to our trade in 1895. Blanche Burpee has shown up much better this year than last, and while being a rather weak germinator like the other white seeded sorts, it is the largest white to date. A California strain of this called The Bride will probably show better germinating quality, but is almost identical in other respects. While Emily Henderson does not seem to improve in germinating quality, I think Blanche Burpee will steadily gain in this respect. Duke of York is a very disappointing, mongrel sort of flower, not at all up to Eckford's intention. Duchess of York is of only second rate quality, with delicate pinkish purple stripes on a satiny white ground. Eliza Eckford is a rather pretty white and rose, and bouquets with dainty effect. Meteor is a decidedly richer orange salmon than Orange Prince. We shall soon have this color in grandiflora size under the name of Refulgens. Mrs. Joseph Chamberlain is the largest sweet pea to date, and is a very bright rose striped. Novelty is only second rate in size, but it is a bright rose with an infusion of light scarlet. Katherine Tracy made a good debut last year, but has gained greatly in favor this year. It is a boldly expanded, soft, blush pink, having but one fault, that of bearing only two blossoms on the stem. It is decidedly distinct, although it has the same color as Princess Beatrice and Royal Robe, and will be given the preference by florists over the two latter. The Eckfords for 1896 have shown in California pretty nearly their true type, and still the Eckford sealed packets were all made up of drouth-stricken stock, and it will take two years of California culture to bring them up fully to type. Crown Jewel is the only first-class variety in the set. It is a violet rose tint on cream ground. Countess of Aberdeen was very high grade as I saw it in England, but the type does not hold, the stock breaking into two sorts, one almost white, the other a soft pink. The deeper color should form an edge on the other to be true to type. Captivation is a color that does not captivate. It is of fine form, and a light purple magenta. Little Dorrit has disappointed us, but as I saw it at Eckford's I was greatly pleased. We need a pink and white in which the color will not run into the wings. Little Dorrit as I saw it was a bold expanded flower, the contrast of standard and wings being sharply lined, and the pink of the wings being less of that scarlet tinge which we have in Blanche Ferry. I shall watch with interest to see Little Dorrit come into true form after a year or two, and give us something decidedly in advance of Blanche Ferry. Mikado has also behaved badly. Most of the stock has produced what I would call a large sized Ovid. What Mr. Eckford calls a

cherry ground means I suppose a cherry color. Mikado will not hold any place among striped sorts, for there are so many that are prettier. Alice Eckford hardly holds to the description. Although of ordinary size the creamy white with a sort of apricot tint bouquets daintily and strikes one as a new effect.

But now the American novelties for 1896 have shown up to fine advantage. They have been strong, free blooming, and have at once shown at their best. We must not forget that the best of them have Eckford blood in them. Ramona is superb and grand. It is a large creamy white with splashes and flakes of soft pink. Gray Friar has attracted much attention, the color agreeing well with the name, and the large blossoms making lusty bouquets. Juanita (Wahneta) is a good sized white touched with splashes of light blue. Oddity, so called for its curled look, has bloomed profusely, and its pale carmine color is not bad. Day-break has won many friends. It is not large but pretty, with watered scarlet on white ground, and it came true with me for seven years before I let it go. America is an intense cardinal stripe and takes well. Bride of Niagara when bunched would pass for Painted Lady, but you see on examination that about thirty per cent of the stems have one or two so-called "double" blossoms. Celestial came from Germany. It is practically the original Countess of Radnor. Radnor is hard to hold, and deteriorates rapidly by running into a reddish mauve. All our trade stock is poor, Celestial has given us back the beautiful soft lavender. I do not expect it to hold any better than Radnor. A special strain of Radnor has been grown for Burpee which gave me trial stock this year of the true original variety. Only the severest roguing can hold it up to the type. Three-fourths of it need to be pulled up every year to keep the stock graded up to true type. Extra early Blanche Ferry has won universal commendation this year for being just what is claimed for it. Its earliness is decidedly in its favor.

Now I have had Mr. Eckford's set for 1897. Others have had them, but I am not responsible for the way they get them. Mr. Eckford offers them in his retail catalogue in England, and I see nothing to prevent anyone who has friends in England from sending through them for them. The trade cannot get them so as to list them till Mr. Eckford has had them in his retail catalogue for one year. This advance set shows some of the quality of Eckford's best and latest work. Coquette is a large, rich primrose cream, with slight tint of violet rose. Countess of Shrewsbury has a delicate purplish pink standard and white wings. Lovely is a large shell pink, Mars is a grandiflora crimson, the largest of the blood reds. Prima Donna is of grand size, a medium shade of rose pink. Royal Rose is a great improvement on Apple Blossom. Mr. Eckford has shown in England a new very soft lavender called Lady Grisel Hamilton, and a grand, rich primrose cream called Queen Victoria, also Prince Edward of York, which is in the line of his old Princess Victoria.

What about Cupid? A pink and white Cupid will also soon be offered. My interest in these is, to study them as historical links in the development of the flower. Too much was expected of them at first. But I look for a new hybrid race of sweet peas, and Cupid has had a timely advent as giving us a dwarf parent stock for crossing with the tall kinds. I am hopeful that from it we shall get the sweet

pea of the future, with less tendency to vine. My own vines this year, ten feet high, certify to a great need of a half dwarf race.

I have on trial a curious seed variation from California, Red Riding Hood. It is a decidedly new departure. The standard is abortive, and is drawn like a night cap over the wings, so that the latter project forward like a little bonnet. The color is bright rose. It has a snapdragon look. The public will deliver their judgment on it in 1897. Among the new things also will be a grand salmon pink stripe that the Massachusetts Horticultural Society gave me a first-class certificate on. I consider it an extraordinary thing. Burpee will introduce it. I want it called Clara Barton, but that is not decided yet. I have had on trial several new things under the names Bridesmaid, Emily Lynch, Kilauea, Flambeau, Chinook and others. I look forward to next year with great interest, for all the new things will show up much better than this year. Sweet peas will never be less popular and the rapid increase of sweet pea shows will develop an intelligent interest in the finest sorts.

W. T. HUTCHINS.

Indian Orchard, Mass., August 27, '96.

HARDY PHLOXES.

I like the phlox because neither cold nor drouth, bugs nor worms, nor anything else that I know of has ever been able to kill any variety that I have planted, but there are many poor varieties among them and many that are alike. For 15 years I have been buying and importing them from Germany and England, buying any and everywhere if I thought I could get something new or distinct, and now after all my pains I have only three varieties that I should care to recommend to my friends. The best one to bed out in large quantities is a French variety called Boule de Feu, or ball of fire, if you get the true variety; the catalogues call the color fiery scarlet. I had a bed of 300 plants of this variety that was almost dazzling in the sun, and its flowers when open can be seen at a longer distance than can those of any flower I know of.

Another variety that I have lost the name of has white flowers with a bright crimson eye, but instead of being a distinct round eye it shoots out in a ray in the flower and makes a beautiful combination; it is of French origin. The third variety is a seedling of my own, and which my good friend, the editor of GARDENING, has named Springfield Beauty; it is of a beautiful pink color and fine for bouquets, and the plant is a strong grower. I grow these three varieties in large quantities for this purpose, but the demand for them, especially for the two last, is such that I do not make much headway in their increase. Last winter was so severe that it killed a great many of our hardy flowers, but none of our phloxes suffered in the least. In July and August, when hardy flowers are scarce, we fully appreciate our hardy phloxes.

Springfield, Mass. CHARLES L. BURR.

GRAB GRASS.

Is there any means of eliminating crab grass in lawns? I have seven acres, and notwithstanding re-seeding each year with two or three bushels per acre of the best lawn seed obtainable each season and liberal fertilizing with best fertilizers, the villainous pest has virtually crowded out all other grasses. During the hot weather I water copiously from three-inch water

pipes; can it be that too much moisture is used? The grass is closely cut each week.

EDGEMOOR.

Chicago.

The crab grass has come to stay, no matter what you do, and plowing under, reseeding, fertilizing, or watering won't destroy it, for it is as fond of good living as any other grass we know of. It is an annual and bears and ripens lots of seed about this time of year, the wiry seed-laden branches hugging the ground below the reach of the mower so as to escape to sow another crop for next summer. But we can help to keep it in check. Fertilizing and watering so as to encourage and retain an early and full growth of blue grass and white clover will help to check it out, and frequent mowing tends to lessen its strength, and raking and mowing will nip the countless spears that otherwise might escape uncut.

ARUM DRACUNCULUS.

I procured last September two large bulbs of *Arum Dracunculus*, fine healthy looking bulbs with some signs of bud beginning to break through. Thinking the fall was the proper time to start them I potted them in same soil and treated them just like my hyacinths, putting them away underground for eight weeks. I noticed when I took the hyacinths that no growth showed on the arums. Turning them out of the pot to examine them I found four or five healthy fleshy roots, so I put them back in the dark for four weeks more. At the beginning of the year I put them into a cool frame thinking they needed light, and meanwhile I read in a book or paper that they were spring bulbs. I kept them in good light and moisture until May, when I turned them out of their pots into a nice rich, moist, sunny position expecting them to grow, but though they are plump and healthy and the roots the same they have never budged a shoot. The little shoot at the top is as silent and forlorn as the day I received them. Please tell me what is the cause of this moroseness and taciturnity, and what shall I do to make them grow? Is it a disease or is it just "a way the family has of doing?"

Abilene, Texas. A SUBSCRIBER.

The plant is a summer grower and bloomer. You should have planted them out in your garden in nice, rich, moist soil, but not in a sunny position, instead, in a slightly shaded one, and let them alone. They are perfectly hardy with you.

GIANT HYSSOP—SALVIA.

1. W. H. S. W., New York, sends us by express two plants for name. One was raised from seed sent to him from China under the name of *Calamintha Clinopodium*. "It grows from 8 to 12 feet high, and a large clump of it is very imposing on the lawn. The bees are immensely fond of the flowers and almost fight for possession of them." Ans. *Calamintha Clinopodium* is a common American plant. We make out the plant you send us to be a species of giant hyssop (*Lopanthus*).

2. "The other plant sent is a member of the salvia family." Ans. It is *Salvia coccinea*, a plants in common cultivation in gardens, being easily raised from seed and flowering freely out of doors. There is also a dwarf form of it and a white flowered one as well as the typical scarlet one.

GLADIOLUS CHILDSII.

These have been very fine with us this summer. How beautiful they are! They are far superior to the common run of gladiolus. We grew a number of them, and so pleased are we with them that we shall plant them more largely next summer. By planting them from time to time up to the first week in July a steady supply of flowers will be had all summer; the first planting can be done just as soon as the ground can be worked in spring. As cut flowers they are very good, only they have to be cut as soon as the first flowers are opening. They will then open nicely all other buds up the spike. Cut a little piece off the stalk every other day, and they will keep much fresher. Among the finest ones we had were: Mohawk, Ruby, Bessie Tanner, William Falconer, Volande, Burlington, Dr. Parkhurst, Torchlight, Mrs. W. M. Bird, Henry Gillam, Winthrop, Rosedale, Cincinnati, Dexter, Brilliant, Livonia, Sacramento, Mrs. Beecher, Oddity and Sandusky.

Mahwah, N. J.

DAVID FRASER.

THE LEATHER FLOWER.

(*Clematis Viorna*.)

In rambling through the woods near Berkeley Springs, W. Va., last July I came across a very pretty clematis in flower. The flower was of the form and character of the coccinea, but of a lighter pink color, but the vine had the leaf and manner of growth of the "Virgin's Bower." It was not a round leaf like the coccinea, but long and sharp pointed. The growth of the vine like the purple clematis. What kind is it? I brought the roots and stem and propagated it properly, and it has made a new growth of 15 inches.

Pittsburg, Pa. E. D. B.

No doubt it is the above-named (*C. Viorna*).

CLEMATIS PANICULATA.

This most splendid hardy climber is just bursting into bloom, and is a splendid sight even before it opens fully. There is nothing as fine in the way of a climber at this season, and nothing better at any season in a situation for which this clematis is adapted.

Utah.

J. A. E.

And be sure you grow *Clematis Flammula*, too. It looks like paniculata, and is as vigorous and healthy, but it blooms a month earlier and is very fragrant.

WORMS v. FERTILIZER.—R. J. R., St. Joseph, Missouri, asks: "Can you recommend any fertilizer for flower beds that does not breed worms, as horse and cow manure do? Also are worms in all rich soils?" Ans. Rich, cultivated, heavily-manured soils are apt to be much infested with worms, and the more animal manure that is put into the ground the greater is the attraction for the worms to breed in it. But whether or not worms in such soils are injurious to vegetation is an unsettled question, they certainly don't eat the living roots of plants as some suppose they do. They channel the soil and render it pasty, and their heaps of casts on the surface of the soil are unsightly. Any "complete" fertilizer will suit you; in fact if your ground is already surfeited with humous a commercial fertilizer may be very desirable for it. "Is the fruit of white fringe (*Chimonanthus*) poisonous?" Ans. We do not know.

BALSAM AND LARKSPUR SEED.—R. A. O., Watertown, N. Y., writes: "I have balsams and larkspur in a bed in which I wish to plant bulbs. Will the seed ripen by pulling the stalks and hanging in a dry, cool place? Would it be better to remove the plants with the earth around the roots intact to a trench?" Ans. Pluck off the rougher leaves and pull the plants up by the roots, then hang them up in a dry, but not draughty, place, if the seed is well filled and firming it may ripen. But really both balsam and larkspur seed are so cheap the game isn't worth the candle.

PLANTS FOR NAME.—W. S., Stratford, Ont., writes: "I send by same mail some leaves of plants for name. I have numbered them. Ans. Number 1 is *Argemone Mexicana*, a somewhat thistle-like annual with yellow poppy-like flowers; No. 2 is ginger (*Zinziber officinalis*); we wish you had given us some particulars about the plant from which you plucked the long yucca-like leaf No. 3.

CUPID DWARF SWEET PEA—I planted one large "original packet" of seed as carefully as I knew how and waited patiently for the young plants to appear but did not get a sprout. Many varieties of the tall sorts, from the same source, did finely.

F. C. DOWD.
Connecticut, September 7, 1896.

Aquatics.

HOW TO MAKE A WATER LILY POND.

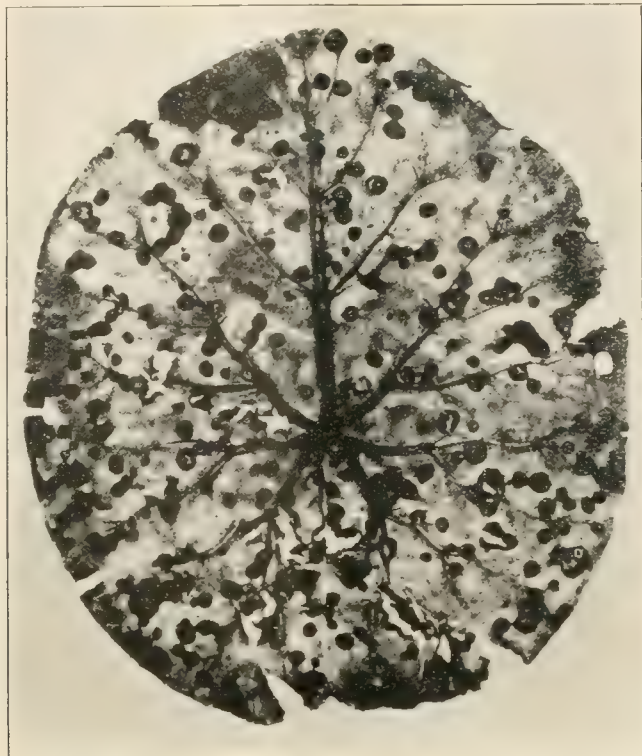
The simplest, least costly, and the most effective aquatic garden or lily pond can be constructed from a natural hollow or swampy spot that one hardly knows how to treat otherwise. It may have sloping banks with an abrupt projection or two, and a background of trees at the top of the slope.

If nature is kind enough to furnish such material to work upon, the making of an aquatic garden is an easy task. However, with proper consideration of the location and conformable treatment an aquatic garden can be made to harmonize with its surroundings, be they the natural forest, the city square or the floral pasture.

Having such a piece of ground as that outlined above, the first thing is to stake out the shore line, taking advantage of and bringing out any natural beauty the place may possess. The outline of the pond should vary in contour; bold points should be made to flank and partly mask deep recesses of the shore into the line of the bank, and thus help the idea of vastness of water surface.

From off a strong point an island may be thrown up with the excavated material, all tending to break up and lengthen the shore line; it is from near the shore that an intimate acquaintance can be had with our aquatic plants. A walk should follow nearly the shore line, occasionally forming a part of the beach, again passing behind a thickly planted point, to strike the water again at the head of a cove bedewed with starry blossoms and fringed with other beautiful forms of aquatic growth. The banks between the walk and the water may be planted with hardy and mostly native plants in groups and masses.

The treatment of the ground farther up the slope should be of the character of a setting for the pond, such as an arrangement of shrubbery and native plants. Boulders and rocks of large size can here be used to advantage, as well as on the banks of the pond.



LEAF SPOT OF THE WATER LILY

A depth of water of two feet is desirable, with the ability to raise the water another foot in winter in cold latitudes for protection from frost.

In a loamy soil not containing a large proportion of sand, no puddling is necessary to hold water. On sandy or gravelly subsoils, a covering on the bottom and sides of the pond of tough clay well puddled in, will have to be laid; this covering may be 3 to 4 inches thick, and if costly or hard to get might be reduced to 2 inches. A covering of sand or fine gravel should be spread over the clay, to avoid the stirring up of mud by the attendant.

The writer prefers to plant the lilies in boxes rather than in the bottom of the pond. The boxes may vary in size from 4 to 10 or 12 feet square and 12 inches high, without bottoms excepting a board or two or sufficient to hold them down by the weight of the soil, and open bottoms permit of root extension beyond the area of the boxes. Boxes too allow easy access for change of soil, or division of plants, both operations are necessary in successful culture.

Nymphæas are gross feeders, and seemingly cannot be surfeited with high living. A compost of half loam, and half well rotted manure, with the addition of a little bone phosphate makes them very happy. Overflow and outlet pipes are essential, the one to empty the pond, the other to carry off scum, dust and growths of floating algæ. For this it is best to lay a pipe, common 6-inch drain tile will do if the puddling is tight; otherwise use sewer pipe with cemented joints. This pipe should be laid on the border of the pond, and to it 4-inch connections made at each recess or bay in the border of the pond at the summer level. This will serve to carry off objectionable floating matter very satisfactorily. Provide plugs for each overflow pipe, so that by plugging up certain pipes a greater overflow can be

induced at others where necessary. To avoid leakage at these overflow pipes in winter, use an iron end on each for the better driving home of the plugs. A generous provision for such overflow pipes will never be regretted by the culturist who desires a clean water surface.

When the water supply is very cold only water sufficient to run off the scum should be admitted. With one or two exceptions better growth can be had from even hardy species and varieties in a temperature of 75° or 80° than from that of spring water.

We once drew water from the surface of a shallow lake for a lily pond supply, and obtained thereby a temperature of from 78° to 84° with remarkable results, the regular supply being 60°. Aquatic plants will not flourish in artesian water, containing salt, lime and iron.

Few insects trouble aquatic plants and three of these as late as '94, if my memory serves me right, were unidentified by the Entomological Dept., Washington. One is a fine thread-like larvæ about 1/8 to 1/4 inch long; it desiccates young nymphæa leaves very quickly. Frequent dipping of the leaves in tobacco or whale oil soap decoction is the best remedy we have formed. Another larvæ is a leaf miner, it burrows in the parenchyma of the leaf. We cannot reach this fellow, but as he is not abundant his work is not very noticeable. The egg of another is deposited on the top of the leaf stalk of the *Nelumbium*. Arsenical spray will not lie on the spot, so picking off the eggs or burrowing down the leaf stalk after him seems to be the remedy until we can find a better one. Green fly can be kept down by the hose spray, with the help of sunfish and goldfish, which are essential to any well-appointed lily pond.

We met this season a hitherto to us unknown trouble, a blackening and rotting of nymphæa leaves in a wholesale manner until we found it yielded readily to

the Bordeaux mixture. [Probably this is the same disease as is shown on the nymphæa leaf, this page. The spot is caused by a fungus of the genus *Cercospora*. We had a good deal of trouble with this disease in some of our lily tubs at Dosoris last year, and although we used fungicides for it we could not stop it. Plucking off the worst leaves, washing the others with fungicides and changing the water often and completely, and removing part of the surface soil, did not stop the trouble. Still out of over forty tubs it confined itself to three or four. —Ed.]

While on this subject the crayfish might be noted; it is to be dreaded when numerous, not only does it tap the banks or clay puddling, but for some reason eats off young growth. The writer once had a weary experience caused by a swarm of them until it was discovered that chopped meat mixed with Paris green laid at night on the edge of the pond effectually cleared them out.

To bring out to perfection the glories of the *Victoria Regia* and the tropical nymphæas a temperature of from 85° to 90° is necessary. This generally must be obtained by artificial heating, this is the most satisfactorily attained by the hot water system, carrying the pipes around the inside of the tank or pond near the bottom. By sinking the boiler room and burning anthracite coal this may be done without obtruding a nuisance into view, the chimney being low and faced with rough rock work and hidden behind a clump of shrubbery.

A tank or basin with cement concrete walls and bottom may be more desirable for formal or artificial surroundings, as for instance a garden or floral parterre, and for growing tropical aquatic plants. The construction of such a basin is a simple matter and within the capacity of ordinary handy laborers. First dig a trench for a wall of the necessary depth to protect the bottom from frost and of the desired width. Make a concrete composed as follows: One part Portland cement to four parts clean sharp sand and eight parts clean crushed stone. Thoroughly mix the sand and cement dry, then wet the stone and add it to the pile, turning over again until thoroughly mixed, adding water enough to make the concrete the consistency of moist sugar. Place in the trench and ram in four or five inch layers quite firmly until the surface of the ground is reached. Make joints seven or eight feet apart all around the wall by cross-partitioning, filling the alternate spaces, and when those are set removing the partitions and filling the remainder, first laying a strip of tar paper in each joint. Next excavate the interior of the basin and lay the bottom with four inches in thickness of the same concrete, making the slabs alternately and facing each with a compost of one part cement and two sharp clean sand of the consistency of mortar, and trowelled on smoothly. Make all joints continuous, not alternating. The top of the basin may be finished above the ground line with a coping moulded in frames of wood, laying the pieces alternately and keeping the joints vertically in line with those below. Finish top with trowel coat. In lieu of a cement coping one may be made of rock work.

A basin so constructed will not leak nor will it crack in unexpected places, and if the bottom is laid on porous material and drained the basin may be emptied of water in winter and will be safe from damage by frost.

J. A. PETTIGREW.
Supt. of Parks, Brooklyn, N. Y.



POND FOR HARDY WATER LILIES, MADE BY MR PETTIGREW.



OUT DOOR POND FOR TENDER AQUATICS, MADE BY MR. PETTIGREW.

GARDENING

WILLIAM FALCONER, Editor.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE NEWER SWEET PEAS.—If you want the candid truth about sweet peas be sure you read the article by Mr. Hutchins in this issue of GARDENING, page 6. Mr. Hutchins is the greatest authority on sweet peas in this country; he makes this flower a hobby and a study, and he not only grows every variety in cultivation but also has an "inside view" into the new and coming varieties that is denied to most of us. Study the article in question, and when you come to make up your list of sweet peas for next year be sure you refer to this article and take a hint from it. It was written by Mr. Hutchins in the heyday of the sweet pea season in his garden, and on the ground among his flowers. It is the voice of actual, practical, experience.

WAKE UP, PHILADELPHIA—Hear what one of your citizens writes to us: "The collection of roses at Fairmont Park is not very extensive, it is true, but the varieties grown have been selected with great care and usually attract the attention and elicit the admiration of visitors. The severe pruning they receive every year induces vigorous growth and profuse flowering. The rose borders are located on the south side of Horticultural Hall, and there may be found a strong plant of the old rose, Reine d'Angleterre, which in June is literally laden with bright pink flowers, they being more abundant than on any rose bush we have ever seen. The newer roses, such as Crimson Rambler, the yellow and white Ramblers, the grand Carmine Pillar, and Single Crimson bedder, have not yet found their way to the park. In canna our park is poor, very poor, the only kinds I find there are Mme. Crozy and a miserable yellow mongrel not worth the trouble of planting out." A. B.

WATERING PLANTS.—Mr. Mitchell's note about the lavish watering of grape vine borders reminds us of a point in horticulture as regards watering that is sometimes overlooked. Ready, clean and perfect drainage is the keynote of success in horticulture. As an illustration let us take a pot plant. With full, free and perfect drainage it will be hard to overwater it; with imperfect drainage we can stagnate the water in the soil and render the plant unhealthy in a little while. With perfect drainage we can water a vigorous plant most every day till the water runs out at the bottom without any fear of souring the soil; more than that overflush waterings are often of much benefit in washing out stagnating moisture and keeping the soil fresh and sweet. Take an orchid pot filled with moss. Once thoroughly wetted that moss will be apt to keep wet for several days, and if we keep on giving a little water every day just to keep it equally moist all the time the moss will soon begin to decay and sour and the roots to rot. But if in watering we dip that pot in a tank till the water runs right through it in quantity or pour water into it till it runs out freely the escape water will wash out the stagnation and impurities from the moss, and the potting material will be pure and sweet all the time and the roots alive and healthy.

OLD BUTTER TUBS FOR PLANTS—We have just bought a thousand empty butter tubs from the grocery stores to pot a lot of plants in; they are of two sizes, namely, 30 lbs. and 60 lbs. tubs, and they cost us 4½ cents each. They have wooden hoops, but we drive a few wire nails into the hoops, clinching them on the inside, and in this way keep the hoops securely fastened; also we bought some light strap or baling iron and hooped a lot of the tubs with it. For draining we bore a lot of ¼-inch holes in the bottom of each tub; before using we strew a little chopped straw in the bottom, then in with our plant and soil. Before using, though, the tubs are cleaned from any grease, scorched slightly over a fire, painted inside with a daub of cement and outside with metallic paint. If the tubs are too deep we saw a piece off the top, usually down close to the first hoop. We use these tubs for hydrangeas, hardy shrubs used for forcing, big plants of Canterbury bells, chrysanthemums, and some other things; and they are nice things to winter over some of the tender aquatics in. In fact they are as useful as pots without being breakable, and when

used for hardy shrubs that we wish to leave out of doors to get the frost in winter there is no fear of them being burst by frost, as is sure to be the case with pots. At Glen Cove we used to get iron-hooped tubs, but the grocers here seem to have the wooden-bound ones only.

The Greenhouse.

WINTER FLOWERING PLANTS FOR THE CONSERVATORY.

The sweet pea is one of the finest plants for winter forcing. From a space about two feet square we got last winter more blooms than from ten times the space in the garden in summer, and they continued a long time blooming. Get seed of the tall named varieties and sow it in pots, putting three seeds in each; when the plants are well up plant them in nine inch deep boxes in rich soil, and about eight inches apart, and train along the rafters. When the boxes are filled with roots give liquid manure. They blossom in about two months or ten weeks from time of sowing.

ANTIRRHINUMS rooted now from selected sorts make nice blooming plants for winter and spring. *Majus alba* is the favorite sort for cutting.

GERANIUMS rooted in summer should be potted on for winter and spring blooming; keep the flowers pinched off. For the amateur it might be as well to procure a dozen good sorts from some reliable florist, in 3 inch pots.

LOBELIA ERINUS makes a pretty pot plant for the conservatory in winter in a sunny position.

DWARF NASTURTIUMS should be rooted from tops now; they will come in very useful for cut flowers in winter.

MIGNONETTE should now be sown either in the benches where it is to remain, or in pots to be planted in the benches later on. To secure good spikes of bloom the lateral shoots should be pinched off.

CHRYSANTHEMUM TRICOLOR and sweet alyssum should also be sown.

FLOWERING BEGONIAS that have been planted out over summer should now be lifted and potted.

BOUGAINVILLEA GLABRA and its variety *Sanderiana* should be placed in the cool greenhouse by the end of September and kept rather dry, to be brought into heat later on.

COREOPSIS TINCTORIA seedlings should be lifted and potted—they are generally self-sown—and they will bloom during the winter. I find that *Coreopsis lanceolata* will not.

HELIOTROPE cuttings should be made now to plant in benches later on; also cuttings of *Impatiens Sultani*, which will brighten up the house during winter.

JASMINUM GRANDIFLORUM should be lifted, potted and brought into a warm house as required.

OLEA FRAGRANS is a very useful, fragrant decorative plant for the conservatory and of easy culture.

THE WHITE SWAINSONA should be planted in the benches if not already done so.

JUSTICIA VELUTINA and *Ruellia macra-tha* are easily grown flowering plants for winter decoration.

COSMOS should be brought in doors soon; if planted out it should be carefully lifted and kept shaded for a few days.

AZALEAS and **HYDRANGEAS** should be put into cool winter quarters by the end of the month. Don't let the frost catch

the hydrangeas, as it will injure the terminal flowering buds

SEE TO THE POTTING of Bermuda Easter lilies, calla lilies, freesias, Roman hyacinths and oxalis.

WE DON'T SOW our cinerarias or calceolarias till September, as we aim to have them late so as not to occupy space during chrysanthemum time.

HABROTHAMNUS ELEGANS, *Cestrum nocturnum* and *Nicotiana affinis*, all easily grown, are favorite plants for conservatory decoration.

VIOLETS.—If you want early violets they must be planted early, not later than September 1. Around here many florists plant their violets in their permanent quarters from the 1st to the 15th of August. The more like a cold frame the violet house is the better, just have room enough to get into it to pick the flowers.

CHRYSANTHEMUMS.—After many years' experience we find there is nothing gained by leaving any plants out of doors later than September 1st; on the contrary, there is danger in leaving out the slow growing and weak rooting varieties.

Orange, N. J. W. FITZWILLIAM.

QUESTIONS ABOUT PLANTS.

A. B., of Chevy Chase, Maryland, asks: "Fuchsias, geraniums, begonias, how to save them over winter?"

Ans. If the fuchsias are in pots put them into a cool but frost-proof cellar and keep them a little dry at the root. If planted out, lift them and cut them back considerably, then plant them closely into boxes, which store in the cellar. Treat old geraniums in much the same way. Or lift them, cut them back considerably and pot or box them, keeping them dry overhead, even if a little moist at root. If in pots and you can spare a space in a window for them they will begin blooming in January or February. Yes, hung up by the heels a good many of them will keep alive over winter, but it isn't a very satisfactory method. The best way is to propagate a fresh lot from cuttings in late summer and save these over in the window, letting the old ones die outside. Keep evergreen begonias in the window over winter; a sunless window will answer, but don't let frost near them.

BLACK SPOT ON ROSES.—"Why do the leaves on my rose bushes (otherwise healthy) become covered with bronze or blackish spots and dry up?"

Ans. It is probably a case of black spot fungus, a bad disease. Remedy—good drainage, sweet soil, judicious watering, and rigid cleanliness. Pick off and up and burn every diseased leaf on the bushes or fallen on the ground, so as to prevent the spread of the pest. Fungicides of any kind have not proven quite effectual in destroying this pest.

Roses.

HARDY ROSES FOR CINCINNATI.

The following list of hardy roses may not quite suit the connoisseur, for it contains several old varieties, but these are all almost indispensable. I cannot give up old favorites and tried friends who have so often behaved well and stood by me in heat and cold, for some of the newer and more fashionable beauties from abroad. La France is only partially hardy in our stiff limestone clay soil here.

You see I have not gone into the Hybrid Tea class for the same reason.

Alfred Colomb, carmine crimson.
Anne de Diesbach, lovely carmine.
Baron Rothschild, light pink and rose.
Baron Bonstetten, velvety crimson.
Baronne Prevost, rose, large, fragrant.
Boieldieu, cherry red, large, full.
Beauty of Waltham, rosy crimson.
Caroline de Sansal, flesh color.
Charles Lefebvre, reddish crimson.
Charles Margottin, fiery red, shaded crimson.

Comtesse Cecile de Chabrillant, satiny pink.

Fisher Holmes, an improved Jacqueminot.

General Jacqueminot, brilliant crimson.

General Washington, red shaded crimson.

Gustave Piganeau, brilliant crimson.

Jean Liabaud, crimson-maroon and scarlet.

Joasine Hanet, deep rose tinged violet.

John Hopper, bright rose, carmine center.

La Rosiere, deep velvety crimson.

Mabel Morrison, flesh white changing to white.

Mme. Boll, carmine rose.

Mme. Masson, reddish crimson to violet.

Mme. Joly, cupped, fragrant.

Mme. Laffay, rose color, large, cupped.

Mme. Rival (Auguste Mie), glossy pink.

Mme. Gabriel Luizet, glistening pink.

Mme. Charles Wood, reddish crimson.

Marshall P. Wilder, cherry rose.

Maurice Bernardin, bright crimson.

Marguerite de St. Amand, bright rose.

Mrs. John Laing, soft pink, fine

Paul Nevron, deep rose, very large.

Pierre Notting, deep crimson.

Prince Carmille de Rohan, velvety crimson.

Rev. J. B. M. Camm, carmine rose.

Ulrich Brunner, cherry red.

AMONG MOSS ROSES, the crested moss, Murinais and Salet do well with us. Appoline, rosy pink, and Hermosa, bright rose, are good Bourbons. In the way of hybrid noisette roses Coquette des Alpes, white; Elise Boelle, white tinged with pink, and Lady Emily Peel, white tinged with blush, are good. Gloire de Dijon, climbing Tea, is by far the best of its class, and hardy with us, and Mme. Lambert, rosy-salmon, another Tea rose does nicely in our gardens. Of course Harrison's Yellow must find a place in every cottage yard. George Pernet with clusters of rosy-pink flowers is one of our best Polyantha roses. The Rugosa roses and the hybrid Mme. Georges Buant, are at home with us. Crimson Rambler is giving good satisfaction, and the Japanese trailing rose, *Wichuraiana*, is proving a valuable and desirable addition to our garden treasures.

R. H. WARDER.

Superintendent of Parks, Cincinnati, Septembers 10, 1896.

ROSES IN CANADA.

There are not nearly so many roses grown in this locality as should be, for with a little proper care nearly all the H. Ps. and Bourbons do very well. Varieties that do well on their own roots are most in favor with our people, many of whom are unable to tell the Manetti stock when it springs up from the roots; therefore they do not like to risk planting grafted plants; but when properly attended to the grafted plants do the best, and most of our practical gardeners prefer them.

The climbers mostly seen here are the Queen of the Prairie and Baltimore Belle.

They grow and flower very freely, and they are left standing where they grow all winter and seldom suffer from the frost. They are seldom pruned except to cut out weak or dead wood.

The new Empress of China is doing very well here and is likely to be much called for in the future. Crimson Rambler has not done quite so well, for though it grows well and has proved quite hardy it appears to be much subject to mildew. A few plants of *Rosa Wichuraiana* tried here are doing very well, in fact they show more growth than any other variety near them and if they flower well will be very popular. It has proved quite hardy without any protection. The old Bourbon Queen is largely grown with *Pæonia* for a companion, they being so hardy and so good natured that they will grow almost anywhere.

The favorite H. Ps. are, I think, the following, in about the order in which they are mentioned: General Jacqueminot, A. Colomb, Countess of Oxford, Ulrich Brunner, Baron de Bonstetten, John Hopper, John Bright, Queen of Bedders, Magna Charta, Fisher Holmes, Queen of Queens, Mme. G. Luizet, Dinsmore, A. H. Williams, Boule de Neige, Mons. Boncenne, Giant of Battles, Paul Neyron, Prince Camille de Rohan and Baroness de Rothschild. They are all quite hardy here and all the protection they need is a good mulch of stable manure put on in the fall and taken off again in the spring after the frost is quite out of the ground. I must also mention Mme. Plantier and the Persian Yellow, which are planted here by hundreds and do finely, the only objection to them being their short season of growth and somewhat ragged appearance the balance of the season.

A few of our people grow Marechal Niel and Gloire de Dijon out of doors successfully; they are grown both as standards and bush plants, and when carefully laid down and buried in soil in the fall and not lifted in spring until all danger of frost is over they do very well and flower freely. We have planted out several varieties of tea roses and when they have been properly covered with soil in the fall we have always found them all right in the spring. THOS. MANTON

Toronto.

ARUNDO, TRITOMA, ROSES.

E. M. C., Pella, Iowa, asks as follows: 1. HOW TO WINTER ARUNDO DONAX?

Ans. It isn't hardy with you, but the root clumps may be dug up and heeled into a pit or cold cellar, being covered over with earth to keep them evenly cool and moist. On high, dry, sandy land under a deep covering of loam it might happen to live out of doors with you.

2. PROTECT TRITOMAS IN WINTER?

Ans. Shorten their leaves two-thirds, then before hard frost sets in lift the plants without dividing them and set them close together into a pit, cool cellar or shed, covering and packing about the roots well with moistish earth or sawdust. Divide and replant in spring.

3. ARE HYPERICUM MOSERIANUM and *Caryopteris Mastacanthus* hardy here? If not, how should I winter them?

Ans. No, neither is hardy with you, more especially the latter. Better lift them and winter them in a pit or cellar. But if your land is high, light and dry the hypericum under a covering of earth or ashes, and then a heap of dry oak leaves over that may survive the winter all right even in Iowa.

4. ROSES. Best way to protect Crimson Rambler, Mary Washington and Michi-

gan prairie rose (*Rosa setigera*), say by laying down and covering with dirt, or manure, or to leave on trellis? Does *setigera* mildew if planted in shade? That it does is my experience. I have it planted on the northwest corner of a summer house, but as soon as shoots are 5 to 6 feet long, the leaves turn yellow and later on the stem dies. Last winter I laid plants down and covered them with strawy manure, and two Crimson Ramblers with dirt, but they all were nearly rotten when uncovered in spring.

Ans. Mary Washington isn't hardy with you. By burying the vines of the Crimson Rambler and Prairie with earth as we do grape vines and raspberry canes, but a little thicker, and then placing a deep thickness of dry oak leaves over all, if the land is thoroughly well drained, and porous we know of no good reason why they shouldn't live over winter with you. No, we haven't been much bothered with mildew on prairie roses. How about your soil—is it deeply worked and thoroughly drained?

Chrysanthemums.

MULCHING CHRYSANTHEMUMS.

There is a point about growing chrysanthemums which I have not seen mentioned elsewhere; that is, you must keep the foliage clean by mulching around the plants and close up to the stems to prevent the mud made by rain being splashed on the under side of the leaves. This of course for plants in the open ground. This may be trite to most of your readers, but I have been three years in getting my plants to retain their lower leaves, and being careful in this respect they are now nice looking specimens right to the pot. Sometimes some little trifling matter like this that goes without saying just discourages amateurs like myself who have neither time nor opportunity to ask others for information. But GARDENING is very minute in its direction, and it would be difficult to say how much I owe it.

Ingersoll, Ont. E. A. O.

The Fruit Garden.

WATERING GREENHOUSE GRAPE VINES.

I am an old retired, professional, practical gardener, having for more than three score years practiced gardening in Scotland, England, France, Ireland and America, making a specialty of fruit growing under glass, and I frankly admit that the best example of grape growing I have ever seen is that by your correspondent, my much respected neighbor and friend, Mr. George McWilliam. He doesn't grow grapes as I, a gardener of the "old school" used to, but he grows them better. When I first saw the treatment he gave his grape vines it surprised me, for it was against all orthodox law. I was accustomed to withhold water from the vines as soon as the fruit began to color, but he keeps his wet all the time. When he starts his vines he gives his border (it is inside the house, which is 68 feet long by 22 feet wide) a good watering, and from that time on he will use 3,000 gallons of water at a watering, until the berries begin to color, then he sprinkles his borders every sunny morning, using 300 gallons of water at a time. With this treatment he has the finest show of fruit I ever saw. The Hamburgs he is now cutting average 3-pound bunches; many

are 4 pounds, and of perfect color, bloom and finish. His Muscat of Alexandria is quite as good in finish, and the largest berries I have ever seen. As for his Madresfield Court I never saw anything to approach them in perfection; I wanted to measure some of the berries, but he is so modest he disliked letting me do it. His Lady Downes and Alicante, not yet quite ripe, are proportionately good. [We have known Mr. McWilliam personally for over twenty years as an A1 gardener, and when at the great exhibition at Boston a year or two ago he obtained the gold medal for the finest collection of greenhouse grapes ever exhibited in the country it was only what we expected he would get. Better still, he has, in former numbers of GARDENING described in detail, from first to last, how he grows his grapes.—ED.]

JAMES MITCHELL.
Whitinsville, Mass., Sept. 9, '96.

APPLES AND PEARS.

To those contemplating planting apple trees we would suggest in making your order to include the Jefferis. For the family this is one of the best apples of the season, specimens ripening in succession for several weeks; it is sprightly, rich and of the highest flavor.

PEARS are a poor crop this season on Long Island. The Keiffer while not loaded like last season has enough to make a large crop, and specimens of large average size.

I am much pleased with the Marshall pear. The trees can not be classed with the vigorous growers, but they are very healthy and bear a good crop evenly distributed on the tree. The pears are well adapted for shipping, and where their

quality is known bring a good price. The Clapp's Favorite and Belle Lucrative are blighting badly, and the Onondaga slightly, while other varieties seem to be free. Bartlett's are not as productive as they were last season. The Howell with us bears very poorly, giving only as many specimens as we should have bushels. These frequent repetitions of short crops have caused us to commence grafting it with better varieties.

SILAS L. ALBERTSON.

Market Gardener, Long Island, Aug. 22.

BERRY BUSHES.

Plants of the blackberry and red raspberry are obtained by cutting strong, vigorous roots in pieces four or five inches long and planting them about eight inches apart in drills. Good plants are thus made in one season. Sucker plants coming up around the hill or between the rows are also used and make good plants if carefully dug and a portion of the cross root retained to each of them. New plants of the black raspberry are obtained by covering the tips with two or three inches of moist dirt and leaving them undisturbed until spring.

Cuttings of the currant, gooseberry and grape may be made as soon as the leaves drop. The current year's growths should be selected and they should be cut in pieces about eight inches long.

The cuttings may be set at once eight inches apart in rows out of doors, leaving one bud above ground, or they may be tied in bundles, buried in sand in a pit, cellar, or out of doors, and kept from frost until ready for setting out in spring.

Good plants are also made by layering,
[CONTINUED ON PAGE 13.]



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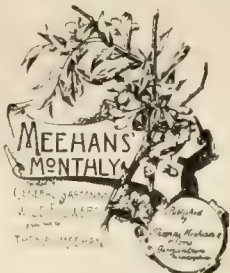
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GERMANTOWN, Philadelphia, Pa.

which consists in bending the new growth to the ground and covering the elbow to the tip with moist dirt.

This is the surest and best method, especially with gooseberries, which are hard to propagate from cuttings. All cuttings should be placed in rich, well prepared soil and thoroughly cultivated the following season. In severe climates protect in winter with a mulch of coarse manure or straw.

There are some advantages in propagating your own plants. You can continue those varieties that do best in your particular locality and soil. You can transplant them as soon as your ground is properly prepared. You can use more care in transplanting, and fill in the missing hills at leisure. But it is no doubt cheaper to buy plants from reliable growers; and if the work is to be simply mechanical and for dollars and cents only, then do not try to propagate small fruit plants. The fruit garden should be a source of pleasure, profit, inspiration, devotion. It should be one of the strong ties that binds us to home ever after.

Sparta, Wis.

M. A. THAYER.

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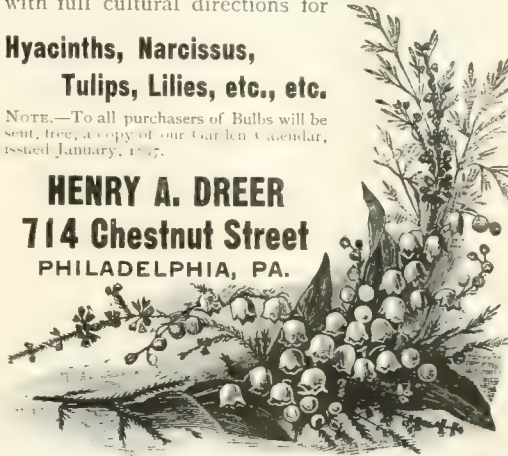
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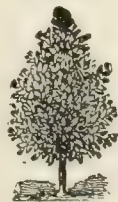
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The Vegetable Garden.

CORN, EARLY GOLDEN YELLOW.

Coming just after the extra early sweet corns and excelling in quality any sort ripening before it is the Early Golden Yellow. This corn for table use is delicious, very sweet and of superior richness, while its golden yellow grains are distinct and attractive. We purchased it last year from Thorburn & Co. but did not plant it till this year. The firm did not list it in this season's catalogue, neither have I noticed it in any other. It is to be hoped that so valuable a variety will not be lost as have been several other good strains of seed. Following immediately after the Golden Yellow the following varieties came on in close succession in the order here named: Crosby, Pee and Kay, Moore's Concord, Stabler's Early, Shaker Early, Potter's Excelsior, Clark's Nonesuch and New Everbearing, Amber Cream, Hickox, Early Mammoth, Asylum, Triumph and Egyptian. These sorts gave us corn for the table for a fortnight, using a different variety each day. We are now enjoying the Country Gentleman. This and the Golden Yellow are the two best in quality that I have named.

SILAS L. ALBERTSON.

Market Gardener, Long Island, August 22, '96.

NEW MALTA SQUASH.

I received eight seeds of the "New Malta Squash" from Mr. Wood. They were planted at the same time I planted other varieties, but two of the seeds germinated and these have made a prodigious growth, alas, however, no fruit set until about three weeks ago and the largest of these is about four inches in diameter and we expect a frost most any time now.

J. E. PRIOR.

Moosup, Conn., September 7, 1896.

If we remember aright all of the seeds we had germinated well, at any rate we have a good many plants, and "you just ought to see them grow," some of them are 40 feet across. Though slow to set fruit at first they are now forming squashes very freely and three or four of these are to be big enough to give us Malta squash pie for Thanksgiving, frost or no frost. No doubt it requires too long a season to be desirable for cultivation in the northern states, but we think it is just right for the south and California. And we sincerely thank Mr. Wood for his kind and unselfish generosity in distributing some 700 packages of seeds of this squash free of charge or any commercial interest whatever, among our people.

ALTHOUGH QUEEN CHARLOTTE still ranks among the gold-edged cannas as Madame Crozy does among the scarlets, we have one that is decidedly better than it, but the raiser who sent it to us for trial has not yet named it.

YELLOW CANNAS.—Wintzer's Yellow is absolutely pure yellow, without a streak or a spot, and it has the largest petals of any of the pure yellows we have seen. We had a strong plant in bloom at Dosoris last summer.

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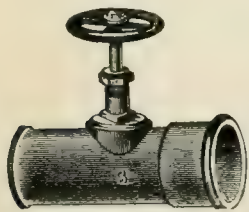
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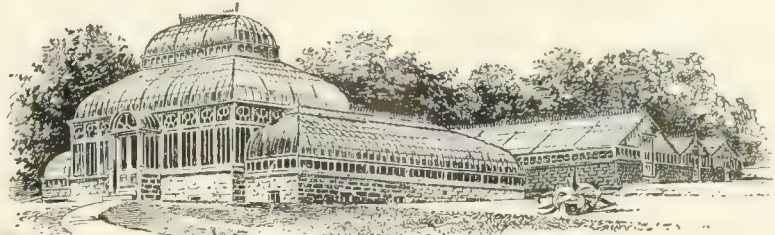
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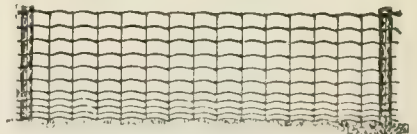
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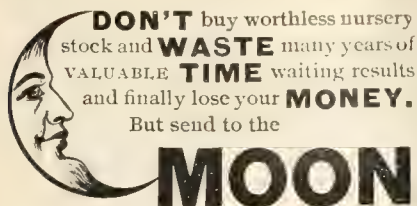
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CHICAGO, OCTOBER 1, 1896.

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No. 98.



DIPLADENIA PROFUSA. FOR WHICH A SILVER MEDAL WAS AWARDED TO GEO MCWILLIAM BY THE MASSACHUSETTS HORTICULTURAL SOCIETY AT BOSTON, SEPT. 2 AND 3, 1896.

The Greenhouse.

DIPLADENIAS.

Dipladenias are woody, long-running, slender vines from tropical and sub-tropical South America, and than their blossoms no flowers are more lovely,—they are exquisitely beautiful. They are not common plants in cultivation at all, indeed there seems to be a prevailing impression that they are hard to grow, but I haven't found them to be so. Those of you who have a greenhouse should try them, I'll gladly give you the benefit of my experience.

At the fall exhibition of the Massachusetts Horticultural Society at Boston, this month (September 2 and 3) I exhibited two plants, and the day before taking them to Boston I had them photographed for GARDENING [Our illustrations have been engraved this year from these photographs.—Ed.] One is *Profusa* (*Dipladenia splendens* var. *profusa*); it has splendid rich carmine open flowers five inches across, and borne in profusion from the axils of the leaves. When exhibited this plant [See it on front page.—Ed.] had over eighty open blossoms on it, and the Society awarded it a silver medal. The other plant [Shown on page 19.—Ed.] is *Amabilis* (*D. amabilis*) and is a large, rosy-crimson flower of firm texture, and borne in clusters. It is also of garden origin, being a hybrid between *D. crassinoda*, a beautiful rose-flowered species from Rio Janeiro, and *D. splendens*, a fine pink-tinted flower from the Organ Mountains. The plant of *amabilis* had over fifty expanded flowers on it when its picture was taken.

These plants were raised from cuttings about six years ago. During the first year they were grown in a warm greenhouse, but since then they have been grown in a house whose temperature is not kept above 50° with fire heat, and it was down to 40° many a night in winter. The plants were shifted into larger pots or pans as they required it till now they are in pans that are in 24 inches wide by 9 inches deep; they were potted into these in the spring of '95, they were not repotted this year. The soil I use for them is tufts of fern root from the woods with some sharp sand added, and the pans are thoroughly drained. In potting we are careful to keep the crown of the plant well up so that water cannot lodge around them. But instead of repotting them this year we topdressed them last February; all the loose compost was taken off the surface of the pans and a dressing of fresh fern-root, cow manure, and sharp sand all mixed together, was given to them, immediately after this a watering was given to settle the compost. As the plants began to grow we gave them a little more water, increasing it as growth advanced. When the plants became well rooted into the new compost we gave them weak manure water once or twice a week, getting it oftener and stronger as advanced growth warranted, till the first of August, when it was given to them oftener (not unfrequently every day) and stronger than most people would credit.

We use no shading over the dipladenias in our glass houses, and during the hot spell of weather we had during this summer I often went into the greenhouse but never saw a dipladenia flower flagging from the heat.

The two plants above referred to commenced to flower early in May, and since

the middle of June we have been getting from seventy-five to a hundred flowers a week from them. The blossoms are very highly prized for table decoration or filling low dishes, and they keep well when cut; they make a good companion for allamanda flowers.

As the nights get cooler we reduce the supply of water till about the middle of November, when we withhold water altogether until such time as we intend to start the plants again into fresh growth.

Pruning is governed by the strength of the plants and the wood; weak wood is pruned short, and strong wood is left from four to ten feet long, and when the plants are repotted or topdressed in spring the shoots are bent over the surface of the compost and pegged down to it with copper wire, a peg being put in at every second or third joint. When growth begins, roots start freely from every pegged down joint, and too from the eyes between these joints. By pruning and pegging down in this way we get more vines to a plant, hence a full specimen sooner than we would if we let the dormant vines run long.

In growing specimen plants the quickest and best way is to put a wire trellis to each plant, then set it on the front bench of a greenhouse and run a lot of strings along under the roof from there to the ridge, running a vine to each string; as soon as a vine reaches to the top of the house, unfasten it and tie it around the trellis leaving the end of it to again run along one of the strings to the roof. When required for exhibition or other purposes like that, take down the strings altogether and train them around the trellis.

The quickest and best way to raise dipladenias is to root the cuttings in spring and plant them out in summer in the garden or field just where one would plant his bouvardias, and keep the ground clean, well-hoed and mellow, and you would be surprised when fall comes, to find what nice plants they have become. They should get the aid of a cane or stick to climb up on. I have grown dipladenias planted out of doors for the last two summers, and I never saw even under glass such fine foliage as they made. Last fall I left three plants outside to see how much frost they could endure without harm to themselves. Five degrees didn't take the foliage off of them; seven degrees denuded them of their leaves, but when the plants were lifted and put into the greenhouse they grew away fine.

GEORGE MCWILLIAM.

Whitinsville, Mass.

BEGONIA-ASPARAGUS.

From a friend in northern Florida I have received a letter asking the following questions: "What is the name of the begonia of which I enclose a leaf and flower? The leaf is one of the smallest, the large ones being a great deal larger. The flowers fairly cover the plant and have a perfume much like our Florida wild rose. The plant I have is fully six feet tall. What is the matter with my *Asparagus tenuissimus*? I received it a short time ago from a well known florist and was pleased with its strong, healthy look. It sends up shoots very rapidly but they soon, before half grown, turn brown and wither. I have near it many ferns, including native Florida ones and *Adiantum cuneatum*, all of which are growing very rapidly and are healthy. All receive the same treatment. Please tell me the name of the enclosed fern. Will you please give me a few directions

as to the care of begonias outside. From 10 to 3 each day it is very hot and many plants are burned, while at other times the rains are so heavy that everything is beaten down." G. C. G.

Herkimer St., Brooklyn.

The begonia looks like *B. Evansiana*, one of the best for outdoor cultivation, and a very free growing, profuse species. Cannot say what ails your asparagus, it should grow where maiden hair ferns thrive. Let it alone for another season. The fern sent is *Pteris serrulata*, one of our commonest greenhouse species and hardy in Florida. Begonias like partial shade from warm sunshine; they thrive admirably under slat roofs, that is frames made of plaster laths or the like with inch apertures between them. These slats protect the begonias from hot sunshine, and breaks the beating of the storms on them, and they admit a free circulation of air at all times.

SOWING YOUNG BANANA PLANTS.

I have a large banana plant in a yard, 3 years old, about to show bloom, I think it is the Orinoco variety and this tree has quite a number of sprouts from a foot to six feet tall. Now can I save these sprouts by separating them from the parent tree and rooting them in sandy soil and putting them in my greenhouse? Shall I cut off all the leaves from the sprouts before potting? E. O. N.

Tracy City, Tenn.

Yes, by all means. Dig up the whole clump and with an axe or sharp spade separate the sprouts close in from the main stump preserving the roots as intact as possible. Cut off the outer rough leaf or leaves and shorten the inner one or ones half or third their length, then pot the plants and bring them into the greenhouse. How much of the leaves should be cut off depends upon the size and condition of the sprout as regards its roots, and the place you are going to take it into. But they are easy plants to get to live.

HYACINTHS AND IXIAS.

The time approaches for the potting of hyacinths, and I am wondering if Mr. James of Hammond will again go through his process of burying the pots in a trench with five inches of sand and cinders over them. Surely this performance must be an immense trouble and as surely an immense waste of time. We simply pot our hyacinths in the old-fashioned way—leaving the bulb well out of the soil—and we tie them down with common wrapping twine, in case the growing roots should be inclined to push the bulb up, and set the pots on the cellar floor. [Isn't covering the pots over with 3 or 5 inches deep of soil or sand much less troublesome than tying down the bulbs with string? We think it is. We are potting several thousand hyacinths, and while it is a very easy matter to lay them even and close together and cover them over with soil it would be a serious matter to tie the bulbs down with string.—Ed.] It is not a cool cellar by any means, because of steam pipes, but with a window left open it seems to answer every purpose; there the pots remain until the buds are an inch high, being watered as they need it, and never covered at all. When brought upstairs the pots remain on the conservatory floor until well into bloom and then go anywhere in the house for decoration, the



DIPLADENIA AMABILIS. GROWN BY GEORGE MCWILLIAM. WHITINSVILLE, MASS.

only restriction being that they must be kept out of the sun. No hyacinths could be finer; there were none so good shown at Vaughan's store last winter, and they claimed to have an expert grower.

IXIAS.—We take much pleasure in our ixias as successors to the hyacinths. Planted at the same time, they come into bloom just as the hyacinths leave, but they are treated somewhat differently; the pots stay on the conservatory floor until the grass appears and then go to some cool window ledge—a south window in a room only warmed from a hall, we like best for them. As six or seven bulbs will do well in a 4-inch pot, cover an inch in planting; one window will hold a goodly array. After they get into bloom the ixias seem to be less particular as to location for we even lend them for decoration, which is certainly a trying ordeal for any plant. I know of no bulb that gives more flowers and bloom for so great a length of time as the ixia, and then they are so graceful. Years ago we possessed some brilliant orange colored ones that were not more than ten inches high;

whereas, those we buy nowadays are much taller. Who has the older variety? [Don't you mean *Tritonia crocata*?—Ed.] By the way, ixias increase as rapidly as freesias, and the bulbs keep fully as well. We simply leave them in the earth where they ripened and keep them dry until re-potting time.

Crownpoint, Ind.

F. N. B.

GLOXINIAS, HOW TO PROPAGATE.—J. E. Y., Waycross, Ga., writes: "As I wish to grow gloxinias will you kindly let me know if there is any other way to propagate them than from seed." Ans. Yes, from leaves, treating them a good deal as one would Rex begonia leaves, except that in gloxinias we use one leaf for one plant, whereas in begonias, one leaf may be cut several times across the veins, and laid on to moistened sand, when new plants will be emitted from every incision.

GARDENIAS FOR PROFIT.—C. W. A., Newport, R. I., asks for a book on how to grow gardenias for profit. Ans. We do not know of such a book, in fact, garde-

nias have never been grown extensively enough in the northern states to justify a man in writing such a book.

THE FERNERY IN THE CONSERVATORY, LINCOLN PARK, CHICAGO.

Several people who have recently been to Chicago have come to us so full of the glories of the fernery in the conservatory at Lincoln Park that we are glad of the opportunity of showing our readers how such a fernery is arranged. The structure is a large, wide, roomy greenhouse with the indoor beds, as it were, sunk under the ground level, and made to represent an uneven ferny ravine. Sunken pathways run hither and thither between the rocky grounds and precipitous cliffs close by a cataract and cross a miniature mountain lakelet. The mounds and banks and cliffs are moulded and faced with a perforated ornamental natural stone, and every bit of space is covered with ferns in hearty luxuriance. Every kind of greenhouse fern in general cultivation finds a genial home in that pleasant retreat, even the tree ferns of Australia,

you will notice them with tall stout stems and umbrella-like tops of fronds towering over the luxuriance of greenery that clothes the space below.

Mr. Robert Londstrom, the florist in charge of the great palm house here at Schenley Park was in Chicago last week and speaks most highly of the beauties of the Chicago fernery. "To what do you attribute the fine health of the ferns there, Robert?" we asked. "To the soil," he replied, "they have been very particular about that, and have gotten the very thing—a dark, free, vegetable soil, that ferns seem to delight in; and they are very careful about the watering, especially overhead watering; and then their house is free from drip. The whole place is alive with ferns, and they have used very few other plants and not much selaginella, but, my! it is grand." He gives us the following list of ferns as the ones he noted as growing in that fernery.

Alsophila australis.
Acrostichum scandens.
Cyathea dealbata.
Cibotium regale.
C. princeps.
C. Schiedii.
Blechnum Braziliense.
Asplenium nidus.
A. bifurc.
A. Belangeri.
Crytomium talcatum.
Davallia platyphylla.
Dicksonia antarctica.
D. davallioides.
Davallia bullata.
D. Fijiensis.
Lastræa aristata.
L. Richardsii.
Lomaria gibba.
Nephrolepis exaltata.
N. davallioides.
N. d. furcans.
N. rufescens tripinnatifida.
Nephrodium molle.
Microlepis hirta cristata.
Nephrodium hirtipes.
Onychium japonicum.
Pellæa rotundifolia.
Polypodium aureum.
P. irregulare.
Pteris argyrea.
P. Victoria.
P. cretica and varieties.
P. leptophylla.
P. hastata.
P. longifolia.
P. serrulata and varieties.
Platynerium alcorni.
Woodwardia Japonica, and many others, common and rare.

Orchids.

ORCHIDS.

VANDA CÆRULEA.—I have this season had a surprisingly large crop of this fine orchid. My plants were well ripened by November 15 last year, having been hung in a dry, airy position through the fall months, and wintered in a temperature of from 48° to 55°, the thermometer on a few occasions during winter falling to 38° and 40°. On the commencement of spring the plants were carefully looked over and all decaying material washed thoroughly from the roots by hose and a pretty sharp force of water; the pots carefully washed inside and out, every particle of decay removed from the roots; the plants were then put back into pots and broken pieces of pots shaken into and around the roots from the bottom to within ½ inch of the top of the pot, and then a thin

layer of tough sphagnum moss from the margin of the woods laid just over the mass of potsherds. No potting material of any kind except the latter was used. The plants were then removed to a moderately warm, moist house and hung closely to the roof; the house kept moist by syringing over floor and under benches, and a free circulation of fresh air was running morning and night. We also had just enough heat in the pipes at night to cause a healthy, buoyant atmosphere. The plants have made splendid growth and have produced an extraordinary crop of bloom of fine quality, and on looking over stock to-day to trim the mass and remove a few weeds that have grown up, I find most of the plants that flowered early are again showing buds, and it looks safe to say that I shall have two crops of this lovely flower this season. I also find the same experience with *Vanda tricolor* and *suavis*. A long rest in winter, a moderate temperature, and not much water at roots will produce heavy crops of flowers during spring and summer season.

All the members of the *Lælia* family will now enjoy all the light you can give them and plenty of water if the plants are in proper condition as to drainage, etc. No epiphytal orchid will do well if the roots cannot get a free circulation of air through the potting material. I have found nothing better than perforated pots or clean baskets filled to the brim and a very thin layer of fern roots washed out and perhaps a few specks of short sphagnum, but this must not be allowed to rot and remain long if you wish to have good, healthy stock.

Now is a good time to look after cockroach and small snails. Coarse bran in which a little Paris green is mixed will be a splendid trap for them. Ants should at all times be exterminated as they are great propagators of insect pests on small palms, orchids, etc., by carrying the coccus eggs and the scale eggs from infected plants to clean stock. I have found beef and ham bones a great attraction for ants, and with a little perseverance they may be soon exterminated.

Utica, N. Y.

WM. MATHEWS.

The Flower Garden.

THE BOSTON PUBLIC GARDEN.

Being in Boston a few days ago we paid a hurried visit to the public garden, that garden so dear to the heart of every Bostonian. The weather for some time before then had been moist and favorable for garden purposes and everything looked beautifully green and thrifty. But there seemed to be a change in the general tenor of the flower beds from what we remember as being there in former years, especially marked was the absence of strictly carpet beds. As regards the filling of the beds, we entered the following notes in our memorandum book on the spot, and we give them to you in the order in which we wrote them as we went up one walk and down another.

Big rhododendrons, bordered with deciduous azaleas, and edged with ornamental leaved beets. We didn't like the beets.

Big green-leaved dracæna in centre, then some hollies and spruces, then crotons, and edged with red alternanthera.

Large latania palm in middle with tall green dracæna, ficus, acalypha, hibiscus,

bordered with yellow alternanthera and edged with echeveria; also santolina and white torenia next border.

Roses bordered with yellow coleus. We didn't like the coleus associated with roses.

Rhododendrons bordered with ageratum.

Rhododendrons bordered with deciduous azaleas and edged with ageratum.

Roses bordered with red coleus.

Iron boundary fence draped with Virginia creeper and pipe vine.

Broom corn, castor beans, edged with acalypha and lined inside with salvia and some pineapple.

Crotons thickly planted, a few acalyphas, and edged with dwarf cockscomb.

Tall ficus, palms, hibiscus and bougainvillea lined with lesser ficuses, palms and acalyphas, bordered with white torenia, then dwarf cockscomb and edged with yellow feverfew.

Long wavy bed filled with *Pandanus Veitchii*, lined with Rex and Vernon begonias, bordered with yellow alternanthera and edged with echeveria; the angles of the waves made up of small agaves, aloes, variegated echeveria, dyckia, African sempervivums, variegated sedum, etc.

A bed on either side of a gate, filled with tall cocos palms, ficus, hibiscus, then tall crotons and acalypha, then lesser ficus, with a lining of Vernon begonias, then a belt of yellow alternanthera with a few breaks in it of variegated echeveria and edged with echeveria.

Banana in middle, with big lantanas, crotons, aralia, monstera, and cotton, and edged with Vernon begonia.

Big cypas in center, banded with cotyledon, with a lining of variegated sedum studded with small agaves, aloes, kleinia, and pineapple; with more cotyledon, variegated echeverias and sedum, and haworthias.

Raised mound bed with grass banks, mass of tall hibiscus, then purple vinca and red acalypha, edged with red alternanthera.

An undulated bed filled with tall cereus cactus, lined with billbergias and pineapples and a few *Euphorbia splendens*, opuntias and yuccas, then red alternanthera and yellow mesembryanthemum, and edged with echeveria.

Under a tall stemmed, thin headed elm, a mass of palms and hibiscus, then a belt of young ficus, next a belt of white torenia and yellow feverfew, then red alternanthera edged with yellow feverfew.

Succulent bed raised at back and sloping to front contained a mass of fine agaves, a few aloes and yuccas, lined with billbergias and bordered with red alternanthera and edged with yellow feverfew. Around a small elm, a mass of hibiscus and acalypha, bordered with white torenia and edged with sweet alyssum.

Crotons thickly planted, then a few acalypha, and an edging of cockscombs. Acalyphas, strobilanthes and eucalyptus edged with variegated anthericum.

Raised bed in a shady place, tree ferns lined with lesser ferns, then belt of dieffenbachias, small palms, crotons, small eucalyptus; bordered with variegated anthericum and edged with red alternanthera.

Shrubby bed consisting of retinosporas, holly, box, aucubas, a few red-leaved castor beans, lined with small aucubas and aspidistras, belted with snapdragon, and edged with dark-leaved iresine. We didn't like the tender soft-wooded plants in company with the shrubs.

Another of retinosporas, yews, spruces, hollies, aucubas, castor beans, lined with euonymus and aspidistras, with a few



FERN HOUSE, LINCOLN PARK, CHICAGO

snapdragons around, belted with aca-lypha, and edged with red alternanthera.

Tall cryptomerias and some araucarias, lined with ficus and belted with variegated abutilons, belted with variegated sedum with a scroll of cotyledon and studding of haworthia, points filled with mixed succulents, and all edged with echeveria.

Near edge of pond beds of tall annual sunflowers, lined with red salvias, and bordered with beets. Didn't like this combination.

Long bed filled with tall ficus and hibiscus, and lined with lesser ficuses and aca-lyphas, green-leaved dracenas, a few cotton plants, and bordered with torenias and dwarf cockscomb, and edged with yellow feverfew.

Long wavy-edged bed with tall palm in middle, then tallish crotons, lined with Rex begonias and a few tuberous ones, bordered with Vernon begonias, then yellow feverfew and red oxalis, and edged with yellow feverfew. At the angle points of the waves a few small agaves, aloes, variegated echeverias (*Hoveyi*) and blue kleinia were grouped together.

Tall ficus with lesser ficuses and Vernon begonias, bordered with Vernon begonias and blue lobelia, and edged with yellow feverfew.

Long undulated bed, with tall palms, then crotons, and a cockscomb lining, then a border of red alternanthera, next to that yellow alternanthera, with an edging of echeveria. The angle points filled with groups of small succulents.

An undulated bed filled with tall cereus and lined with billbergias and pineapples, and a few *Euphorbia splendens*, opuntias and yuccas, then red alternanthera and yellow mesembryanthemum, and edged with echeveria.

Tall ficus and hollies with belting of ficus and lining of variegated anthericum, bordered with yellow alternanthera studded with variegated echeveria, and edged with echeveria.

Spanish laurel lined with *Enonymus Japonicus* and edged with beets.

Many vases were filled with large hydrangeas now some time out of bloom. Others had big latania palms and a lining of green-leaved aspidistra. A drapery of vines we think would have added to their attractiveness at this time of year.

Large rocky angular mound under a Kentucky coffee tree was filled with aloes, billbergias, agaves, cereus, cacti, echeverias, variegated sedum, fleshy kleinias, peperomias, hardy houseleeks, yellow feverfew, some tender ferns, and spread all over with torenia. Considering the great mass of neat, hardy, trailing and vine plants, low shrubs, mossy and carpeting perennials and ferns at our command we would rather fill this rockery with hardy than tender plants.

QUESTIONS ABOUT FLOWERS.

D. M., Two Rivers, Wis., asks:

1. Are the enclosed plants *Clematis paniculata* and *Lonicera Halleana*, what they are named? This is what I bought

them for, but must say I have been disappointed in both of them. The clematis is now covered with blossoms, but it is not fragrant.

Ans. Yes, both names are right. Don't get discouraged, take good care of them for another year and you'll be pleased with the way both of them will grow and bloom, and some dewy evening next September when the clematis is in full bloom and you are returning home from prayer meeting we shall be very much mistaken if you cannot smell your garden before you get up to it, and the fragrance will come from that clematis. We had a very pointed example of this a week ago. We were at Boston, and spent the night with our good old friend James Farquhar, the seedsman, who lives some miles out in the country. In the gloaming we took a ride out through the neighboring country and it was quite dark before we got back home. We were coming along gently up a steep grade when we sniffed the air, it was heavy with the fragrance of flowers, and we remarked: "Well, James, I don't know where we are, but if we aren't getting pretty near your place I'm much mistaken, for I smell that clematis (*C. paniculata*) on your fence." And so we were, it was on the next street over the hill. But such a fence! A hundred yards of *Clematis paniculata* in solid bloom.

2. COSMOS. In last GARDENING you tell us that cosmos should be taken indoors soon, but how am I to get mine in the house? The plants are 8 feet high and

would fill a small room, but not a sign of a bud yet, and we will have heavy frost soon. I planted the seed in a hotbed in April and transplanted the seedlings into the garden as soon as the weather was warm enough. The plants have grown like weeds all summer, but I am not going to get any flowers. Should they have been pinched back to make them blossom?

Ans. As your cosmos plants are so big and growing in the garden, better let them alone, to lift and pot them now would be to lose them. About no signs of flower buds, to all outward appearance that might have been so when you wrote, but look at them now, and we believe you will find every tip of every branch crowded with buds. Pinching would have been proper to shorten the stature of your plants, but of little avail in making bloom early. Next year raise your plants from seed sown in May or June, and grow them in pots all summer plunging the pots in the ground, repot into larger pots as required, giving very rich soil and keeping the plants far enough apart so that they don't touch each other; and as regards pinching, keep them pinched back low down from the beginning. This will give you stocky plants that you can bring indoors at pleasure when frosty weather comes.

3. **CRINUMS.**—I have two large bulbs of crinums which I planted out in a flower bed in June, but they have not bloomed. What shall I do with the bulbs during the winter?

Ans. Cut back their leaves to one-third or one-fourth their length, then dig up the bulbs, and store them past dry as you would a gladiolus or dahlia, being particular never to let frost near them, also to guard against a drying heat, and plant them out again next May.

4. **AMARYLLIS BELLADONNA.**—Will this live out of doors over winter in this climate where we often have zero weather, if well protected?

Ans. In deep, sandy, thoroughly drained land and a well sheltered, warm spot, it might, but it certainly is not a hardy plant in any part of Wisconsin.

MONSTER AURATUM LILY BULBS.

I bought a dozen "monster" auratum lily bulbs last fall and we have greatly enjoyed them this summer. They came into bloom at different times and the blossoms were very varied as to spots and stripes. All except one bulb produced two stalks and some had three, and one stalk upheld fifty-six buds, but these we did not entirely enjoy, for a high wind broke many of them off, so when another flat stalk holding thirty-five buds commenced to open, we cut it and brought it into the house, putting it in water, and every bud came to perfection. There was but one drawback to that bouquet, it did seem neglectful of so much beauty to have lilies facing the portiere that made their back ground, and they would not look as well in any other part of the room. These lilies were planted among somewhat shrubby and north of some large trees, so partly shaded from hot sunshine.

Crownpoint, Ind. F. N. B.

A GOLDEN GLORY COREOPSIS.

Some of the seed catalogues (I take so many I can't say which one) sent out as a novelty the past spring a new coreopsis, lauding it highly, as is usual with novelties, and I got a packet of seeds and have it growing. It's a weedy looking plant growing symmetrical and rather open, and until it blossoms promises nothing. In fact until its time comes you feel like pulling it up and calling it worth-

less. But suddenly and without suspicion it begins to show up and now in the middle of September it's a blaze of golden glory. The individual flowers are cupped somewhat and in color as near like the early mallow of our swamps as anything, and in abundance unlike anything I have knowledge of. It is a rival of *Helenium autumnale superbum* and more of an attractive plant to my mind. Fortunately I have a good lot of it and as individual specimens or in a hedge or clump it is a fine thing. For park planting it strikes me it would be a great success. [Then please remember that Schenley Park is new and bare, and some masses of that golden coreopsis ought to brighten it up considerably; can't you spare us some seed?—ED.] Some of my plants are six feet high and nearly as broad on the ground. I seldom get as satisfactory a novelty and this one pays for several failures.

Tunkhannock, Pa.

OUR GARDEN TO-DAY.

Our garden to-day (Sept. 28), is still in good condition and flowers are plentiful, something which is not often the case at this season of the year. We have had some very cold nights, likewise white frost on the 21st and 23d, but not enough to do any damage in the garden. Plants have made a great growth this summer. The dahlias are six to seven feet high and are flowering splendidly. The cactus dahlias, of which we spoke lightly last fall, are very much improved this year, and I regard them as far better for cut flowers than the old double ones, their blossoms are not so stiff. The single dahlias are in good flower too, but they are always a little ragged.

The Japanese anemones are still in good flower. What a fine thing they are! The white one especially, but in fact all of them are good and easy to grow. We find that they like a half shady place to grow in, we have them in such a place, also in the open and they do better in the partial shade.

What beautiful flowers the fall perennial asters are. Every garden has some half shady place in it where the usual run of plants won't grow, but in such a place asters delight, and at this season of the year when flowers generally are a little scarce these asters come as a godsend.

Golden rods, like the asters, are good and some of the nicer kinds are well worth a place in or around the garden somewhere, although in most parts they are quite common in the fields. They come in very handy for filling big vases.

Another good plant for the fall months is the miniature sunflower, it blooms till frost and a light frost won't even hurt its flowers. The same can be said of the zinnias, French and African marigolds, calendulas, *Zinnia Haageana*, coreopsis, cornflowers, scabios, dwarf and tall nasturtiums, *Begonia semperflorens* and *Vernon*, ageratum, cosmos and *Salvia splendens*, all of these are good fall annuals, and should be grown in quantity to keep the garden bright and pretty as long as possible, but to have them in the fall months a second sowing is needed say about the 15th of May to take the place of the Canterbury bells, forget-me-nots, foxgloves and other early spring flowers; in this way the garden may be kept full of blossoms all summer long.

Another good perennial for the late fall is *Pyrethrum uliginosum*, the giant ox-eye daisy; it lasts in bloom quite a while, and is good as a cut flower, it also is easily raised from seed and blooms the first year if sown early, say in March.

The only lilies we have in flower now are the *speciosum album*, *roseum* and *rubrum*. They have done well with us this year but are now past their best. Another good and easily grown bulbous plant is montbretia. We treat it much the same as we do gladiolus and it does fine from year to year. It is a little tender here although often classed as hardy. The different kinds show best when planted in groups, setting the bulbs close together.

Clematis paniculata is still in fine flower. *C. Flammula* is much like it, but blooms earlier; one should get them both, and in this way have their flowers from early summer till frost—*Flammula* from the latter part of June till August, and *paniculata* for the rest of the summer. Another good vine is the white climbing solanum (*Solanum jasminoides grandiflorum*), it is rapid growing and has pure white flowers that are fine for cutting. It is not hardy but cuttings of it can be put in now and they will make nice plants for planting out-of-doors next spring.

Heliotropes are still in fine flower. Cuttings of these should also be put in now; they root very easy at this season of the year. *Helianthus Maximiliani* is also in flower; it is a tall sunflower, growing about 8 feet high, and a rather rough plant if allowed to grow at will, but if kept staked up it is quite conspicuous.

The spring sown delphiniums are giving us quite a lot of flower. When a good strain of these plants is got I think it is one of the showiest of all perennials, and a stock of them is easily gotten up from seed.

Now is a good time to lift and divide such perennials as have gotten too large, for instance, phloxes, funkias, lychnis, day lilies, iris, achilleas, campanulas, delphiniums, dicentras, gaillardias, in fact nearly all perennial plants can be safely lifted at this season of the year and torn apart, saving as many roots as possible. If a whole bed is to be taken up lift all the plants first, then give the bed a good coat of manure and dig it and reset them. There are always a great many plants left over at such work, but don't throw them away, have a little reserve garden somewhere and in it put all your left-over stuff; it is a nice place to go to when you are in want of a few plants. Put each variety by itself and label everything and this will keep them straight. This reserve patch is not meant for a show garden but as a place to go to and dig up a plant when needed. It is also a good place to go to for cut flowers and it saves the ones in the garden. We have such a reserve garden here and find it a place of much use and interest as part of everything on the place goes into it. It is also a good place in which to try all the newer things before planting them in the garden proper, the habit of them is seen and we know just in what spot of the garden it is best to put them.

DAVID FRASER.

Mountain Side Farm, Mahwah, N. J.

VINES AGAINST A BOARD FENCE.

Owing to the reflected heat of the sun, I have been unable to successfully grow flowering plants in a prepared bed alongside of a close board fence. Next year I have thought of tacking galvanized wire netting two or three inches from the fence over the entire surface, and over this train annual flowering vines that grow four or five feet. My theory is, that while the flowering vines of themselves will be attractive, the covering on the fence will check the heat reflection and render the growth of plants in a bed alongside more success-



A VIEW IN FAIRMOUNT PARK, PHILADELPHIA.

ful. If my theory be correct, kindly inform me what vines will both flower and keep green until cut down by frost, and whether cypress (*I. quamoelit*), canary-bird flower and thunbergia can be depended on for the desired object.

Strasburg, Pa.

S. N. W.

The idea is a pretty one. Now as that wire netting is going to be a permanent covering make a good, neat and strong job of it. Very few annual vines are fitted for the place because they grow up, bloom, ripen seed and die all before frost comes, and some like moonflower, that will last till frost comes, are a little coarse. *Maurandia Barclayana* and *Lophospermum scandens* raised from seed every year should suit you; and the thunbergia, too, will grow there. The cypress and other quamoelit vines will grow there all right, but we think others would suit you better; the same with canary creeper. If not too hot and dry hyacinth bean (*Dolichos*) would be pretty. But why not use perennials instead? If you plant *Clematis Flammula* and *C. paniculata* and *C. graveolens* and cut them down to the ground every winter and let them grow up afresh they would never get naked at the bottom or unwieldy at the top. A few plants of *Ipomoea paniculata* would help you out wonderfully, they would grow well, bloom all summer and up till frost, then you could dig up the tubers, winter them as you would dahlias and plant them out again in spring. The madeira vine would stand the same treatment. It will require a little training and pruning to restrict the vine to a 4 or 5 foot limit.

FAIRMOUNT PARK, PHILA.

It is in the early spring months that our brightest views are seen in Fairmount Park. Many of the borders are simply

dazzling in coloring. Hardy azaleas, rhododendrons, irises and peonies are to be found almost everywhere in great variety and have been used to good advantage in producing artistic effect, as may be seen in the group illustrated herewith. Planted in front of the bright colored dwarf Japanese maples, the contrast of colors is particularly charming.

German and Japanese irises, by the way, deserve special attention. Their extreme hardiness, profuse and gorgeous flowering and adaptability to most soils and situations ought to make them still more popular than they are.

A. B.

POTASH MAKES BEGONIAS BLOOM.

Tuberous begonias vary in the amount of bloom, being all that could be desired one year and the next very disappointing. This year for the first time our bed has been unsatisfactory. Heavily manured with old cow manure and bone flour, the plants grew all right, but the quantity of bloom was very small, and the appearance of the bed in contrast with other years was so marked as to excite comments which were not very gratifying. We felt that when the plants had received the same treatment as formerly, that possibly there might be some element lacking, and as they had abundance of nitrogen and phosphoric acid in the manure and bone, we thought the experiment, if applying potash might reach the difficulty, so to each large pail of liquid manure made from stable dressing, we added about one table spoonful of dissolved muriate of potash, and thoroughly wet the bed several times. This of course gave an excess of potash. The result was gratifying in every respect and the difference was so quickly manifested we concluded the lack of bloom was owing to an insufficient quantity of potash in the soil. Plants that all summer did not have a bloom and others which had small in-

significant flowers, at once threw up strong flower stems and the blooms came freely as in former years, and of the usual size and a fine color, and the bed is now a beautiful sight. We thought possibly this lack of potash might be the cause of the plants acting as GARDENING has mentioned. Any way, we give you our experience for what it is worth.

F. C. CURTIS.

Bath, Maine, Sept. 25, '96.

ROCKY MOUNTAIN BLUE COLUMBINE.

W. S., writes: "I sent to Colorado and got some seed of the blue columbine (*Aquilegia coerulea*) as advised in GARDENING as being the most likely way to get the genuine article, and the seedlings are now up. Shall I have to bring them indoors over winter?"

Ans. If the seedlings look well, and have a fairly good hold of the ground we believe they will live as well out in the open garden where they germinated as they will if lifted into a frame, greenhouse or window. The species is hardy enough and its home in the Rocky Mountains is a far more rigorous country than is the Atlantic seaboard. Just lay a pine or spruce branch over them in winter to save them from hot sunshine and break the winds, also to hold the snow about them.

2. "And seedlings of *Asclepias tuberosa*?"

Ans. Treat as advised above for the columbines.

PORCH DECORATION.

It is sometimes convenient to shade the western end of a porch from the rays of the afternoon's sun, but at the same time there may be certain effective views that should not be entirely cut off. Thrifty vines will in due time produce the desired screen, and their density will soon shut out any view that should in a measure be retained. We have windows in our

houses, why not in our vine work. This question came to me when I concluded to shade the western end of my porch, which is ten feet wide. I originally grew *Cobaea scandens* there but two years ago planted *Akebia quinata*, young vines eight inches apart, making a frame work of one-quarter inch iron rods, at the proper height, reckoning from the porch floor, there is an iron "hoop" of the same iron, oval in form. The upright rods are hooked over it and fastened with wire, all being home-made. The mass of vine as seen from the porch is ten feet wide, and about the same in height, with the window about the center.

W. C. EGAN.

Chicago.

MEADOW BEAUTY (*Rhexia Virginica*).—I have a big patch of this pretty little flower still in bloom in my meadow pasture. They were mowed over with the machine when we cut the hay there in summer, but now we are getting a second crop of blooms from them, the plants are shorter and stockier than they were when cut among the hay, and are bearing blossoms far more abundantly. Near by them the little lady's tresses (*Spiranthes cernua*) is in bloom and in quantity.

Conn.

M. S.

CENTAUREA AMERICANA — N., Tracy City, Tenn., sends us a bloom of this very beautiful Texas thistle-like flower. It is an annual, tall growing species with very large pale purple to deep purple (Hallii) flowers, and it is easily raised from seed.

Trees and Shrubs.

VARIEGATED SHRUBS.

What do you regard as the best low growing shrubs that are variegated, and for this latitude, which is that of Louisville, Ky. The background for them is a row of Norway spruce to be kept in a sort of hedge. Remember that the thermometer here, while usually in winter it seldom goes below zero, yet occasionally sinks as low as 15° below.

D. W. FISHER.

Hanover, Ind., Sept. 24, '96.

While we have a good many variegated-leaved shrubs that are hardy in your neighborhood and which may be kept low by a little timely care and manipulation, the number of those that will remain low, if left to themselves, is few. Best among them is the variegated *Spiræa Bumalda*, but like many other Japanese plants its variegation is only partial, that is, all the branches are not equally well colored.

The variegated *Yucca filamentosa* may not be classed as a shrub, but it answers every purpose of one and is hardy and finely colored.

The variegated Indian currant (*Symphoricarpos*) is of low stature and spreading habit and it is freely but not conspicuously variegated.

The dwarf Japan maples, that is the varieties of *Acer palmatum* and *A. japonicum* are the gems among colored-leaved plants, and although naturally they grow several feet high, there is no fear of them ever getting beyond proper bounds in our gardens.

The variegated kerria (*Corchorus*) is quite pretty and by pruning we can keep it under three feet high as long as we want to; but if left alone, under favorable circumstances it will form a bush five or more feet high.

The variegated althæas have very decided white leaf markings that last untarnished all summer; by hard annual pruning we can keep them under three feet high and without apparently injuring the plants.

The variegated weigelas retain their variegation quite well all summer, but in good ground they grow most as thrifty as a green weigelia, pruning however will keep them under.

Among cornuses we have Spath's golden-leaved and the older white marked *elegantissima* forms of *C. alba*, both of which are desirable; note, however, that the more variegation there is in the leaf the more apt it is to scald in summer. With very little trouble both can be kept under 4 feet high. The variegated-leaved Cornelian cherry, however, is brighter colored than either of the other two and it retains its variegation all summer very well; naturally we would expect it to make a shrub 10 or 15 feet high, but really it seldom exceeds about 6 feet. The finest of all variegated cornuses, however, is *brachypoda*, but it forms a little tree about the size of our wild *C. alternifolius*.

The variegated or tricolor privet is excellent in its way but it grows 4 to 6 feet high. It ought to be hardy with you. The golden privet too is quite nice and hardier than the other, but its coloring is not decided enough.

The golden dwarf mock orange forms broad dense 3 to 5 foot cushions of yellowish leaves and are neat and pretty bushes.

You can get an excellent low-shrub effect by taking the golden-netted honeysuckle or variegated cissus and a few old tree stumps or roots and let the vines grow over them. Much the same thing but in a more condensed form may be had in a well-sheltered somewhat sunless spot, in good moistish ground, by letting variegated European ivy crawl over roots or logs in the same way.

The variegated Japan quince is a very neat, low-growing shrub, but we don't know where you could get stock of it.

The variegated elders are too coarse.

If you cared to use evergreens, besides the yucca already referred to the variegated box is quite hardy with you and it will never grow out of bounds. Then there are variegated retinosporas and arbor-vitæ that can easily be kept in bounds; also *Thujaopsis borealis*, and several of the junipers, but for evergreens generally you want shelter from cold and drying winds, deep, moderately moist well-drained soil, and immunity from drouth at all seasons.

SEASONABLE ORNAMENTAL SHRUBS.

LESPEDeza SIEBOLDII (*Desmodium penduliflorum*) is now an abundant mass of rose purple colored pea-shaped flowers; the plant has stout, pithy stems from five to six feet long. Although herbaceous in character it answers the purpose of a fall flowering shrub. It grows best with us in light sandy soil, and as it has proven to be hardy here for the past three or four years, we intend to plant lots of it. It is easily propagated by division or by cuttings of the ripe wood.

SEA ELDER (*Baccharis halimifolia*) the female or pistillate plant is in full bloom with numerous white, hairy tufts at the tips of all the branches. We never saw it in its native state, along the sea coast, look as well as it does here. In cultivation it forms a very symmetrical shrub, by being cut back quite severely in spring. It grows splendidly in light, sandy soil, holds its yellowish green foliage until late in the season, and although seldom seen

in cultivation we know of no good reason why it should not be used.

CLEMATIS PANICULATA has been a magnificent sight for the past three or four weeks, and is yet in good form. What a splendid vine this is for fall effect! A part of the front of the residence of C. Barry on East Avenue, in this city, is a snowy bank of its white flowers and attracts general attention.

C. FLAMMULA has taken a freak of giving us quite a few flowers this fall.

HALL'S HONEYSUCKLE is producing lots of bloom just now and the red trumpet honeysuckle is in fairly good bloom. *Lonicera glauca* has large bunches of conspicuous reddish berries, and is the most showy of any of the honeysuckles now in fruit. The bushy species have all dropped their fruit.

THUNBERG'S, Siebold's, Canadian and common barberries are all heavily laden with showy fruit.

The different forms of European privet are covered with jet black and whitish fruit. The large fruited scarlet thorn, the black or pear thorn, the dotted fruited thorn, and all the European thorns are covered with differently tinted and crimson and scarlet fruit, and all look attractive.

SOME OF THE cotoneasters are just now pretty in front. *C. Simonsii* in red, *C. nigra* in black and a form we have under the name of *C. Fontanesia*, with long, whip like branches, and covered with red bunches of conspicuous berries are very attractive.

THE AMERICAN and European ononymuses are displaying their crimson and orange-colored fruit. Burge's ononymus with whitish axils and red seeds is showy. *E. obovatus* (claimed by some to be a variety of *E. Americanus*), a prostrate growing form is pretty in fruit.

THE RUGOSA rose makes a handsome display with its scarlet hews. The winter berry (*Ilex verticillata*) is exceedingly showy, covered with showy red berries, and there is a form here with yellowish tinted berries.

FONTANESIA FORTUNEI looks as fresh and green as if it had newly unfolded its foliage in spring. The lustrous green foliage and graceful habit of this shrub through the entire season make it very desirable.

MANCHURIAN and spinosa aralias have been very showy of late with their large white terminal panicles of bloom, and *A. spinosa* is still displaying good trusses.

JOHN DUNBAR.

Highland Park, Rochester, Sept. 28, '96.

QUESTIONS ABOUT TREES AND SHRUBS.

"WOULD TARRED PAPER make a good winter covering for an English ivy growing over a large rock?"

Ans. Yes, if there were a few branches or a little straw between the paper and the ivy to keep the paper away from touching the ivy. We would far rather burlap or coarse bagging, in this case it wouldn't matter how close it hugged the ivy.

OLEANDERS. Is it best to set oleanders in tubs in full sunshine or in shade?"

Ans. In full sunshine when the tubs plunged in the ground. Then keep them well supplied with water. On the Gulf coast where the oleanders are largely planted in gardens they flourish out in the hot sunshine.

"WILL LEAF MOULD worked into the soil, help to retain moisture in a dry garden?"

Ans. Yes. Use it abundantly, although it is not as nutritious as manure it is



CLERODENDRON FOETIDUM

good for the land and much relished by plants.

"IN MAKING A LAWN should you advise using commercial fertilizer so as to avoid weed seeds which are so apt to come in manure?"

Ans. While we would use well rotted manure freely in the ground when the land is being got ready for the lawn, after that, annual dressings of wood ashes, a little nitrate of soda, and some complete fertilizer, would be better and cleaner than stable manure.

SHRUBS UP CLOSE TO HOUSE.—"What shrub or shrubs would you suggest, to make a planting along the base of a piazza? The exposure is southeast; it is four feet and a half to the top of railing; some vines have been started, clematis and Japanese ivy to grow over this. The bed is twenty-three feet by four. I had thought of *Rosa rugosa*, would it look too straggly for such a position?"

Ans. *Rosa rugosa* would do there well enough. Rhododendrons interplanted with lilies and carpeted with lily of the valley or *Hypeticum Moserianum* would also look well, but they would need water.

ROSA RUGOSA. "Are any of the hybrids, of *rugosa* (of those which retain the characteristic leaf) as desirable as the original?"

Ans. As a compact shrub with beautiful clean, healthy foliage, we know of nothing to equal, let alone surpass, the

typical *rugosa* both red and white. We say this after having seen and grown many of these new hybrids and improved varieties.

CRATAEGUS SLUGS—APHIS (?)

What ails my *crataegus*? We planted *C. grandiflora* and *C. rubra splendens* last fall, they came through the winter nicely, and we have had the most favorable summer for plant life, nevertheless these two shrubs are most woebegone in appearance. Some queer pest not unlike a very small black slug, ate the under side of the leaves, as slugs destroy rose leaves, and now the few new leaves are curled up and covered with the tiniest aphid. What must one do, to remedy such a condition of things. F. N. B. Indiana.

Your *crataegus* insects were, no doubt, the larvæ of a saw fly, and are generally termed slugs. They are particularly partial to plum, wild cherry and *crataegus* leaves. They are nasty-looking gummy bodied pests, and fortunately easily gotten rid of by dusting some dry dust over them. We used to dust fresh tobacco powder over them and found it perfectly effectual, so was fresh air slacked lime, and in fact so was dry clay dust. Of course slugshot, plaster with a little London purple or Paris green in it dusted over them would

be speedy death to them. The tiny 'aphis' you refer to we believe is red spider. There is no cure for it now, but if you gather the most infested and fallen leaves there will be less chance of it to get ahead next year.

CLERODENDRON FOETIDUM.

Or as we know it better in gardens, *Clerodendron Bungei*, is a striking plant. As you will see by the illustration (engraved from a photograph taken at Dosoris last year) it has very large metallic green foliage and the shoots are terminated with a very large corymb of rose lilac flowers, that appear in August and September. The wilting seen in the leaves is not peculiar to them; where the plants were growing was so crowded about with other shrubs that we could not get a good picture of it in that position, so we cut some branches and stuck them into the ground in an open spot to have their picture taken; they wilted very quick and that's the cause of their drooping appearance in the picture. The species is a native of China and barely hardy as far north as New York. At Dosoris in a warm sheltered spot and in moist good ground it got cut to the ground every winter, but next spring sprouts shot up all around where the old stump stood, and every strong shoot of these would bear a head of flowers in late summer. But, except for novelty or variety it isn't a very desirable plant; while its flowers are pleasantly enough scented, its leaves have a most disagreeable Jimson-weed odor.

Aquatics.

PLANTING POND LILIES IN THE FALL.

I have a large lily pond about finished at Oak Park, Ill., and am in a quandary as to whether if I plant hardy lilies and lotuses in it this fall they will go fairly well through the winter. The pond is about 30x50 feet, with a brick wall around it, and is in a sheltered spot on the south side of my palm house. I am very anxious to plant this fall as I may be absent next spring. The bottom will be 6 inches of heavy clay loam with old manure forked in, also ground raw bone, then 1 foot of black decayed sod a little sandy, and a couple of inches of clean sharp sand on top. All of the authorities, including foreign, seem to be against fall planting, or rather are in favor of spring planting, but from experience with dry land plants and after reading "Sharp Eyes," by Wm. Hamilton Gibson I am inclined to differ with them. Will you kindly give me your opinion? N. M. F.

Pond lilies planted in fall remain dormant all winter and start into growth the next spring; there is nothing gained by fall planting except getting the work done. If the roots were injured in lifting or moving they may rot before spring, and if you have got musk rats in your pond they will eat the lotus roots; altogether there are more chances of failure in the case of fall planting than in spring planting. But, candidly, if our pond were ready for the lilies, and we had the lilies on hand, and wanted to plant them now, we would plant them now and rest perfectly contented as regards the result. If all wintered well it would be a good gain, but if some of them failed to live the expense of replacing them would be very slight.

GARDENING

WILLIAM FALCONER, Editor.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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PEANUTS AT HOME.—At Mr. Dean's we were also interested in a patch of peanuts in his garden. They looked not unlike some rows of dwarf snap beans. After flowering, the pods as soon as they begin to form reach down to the ground and bury themselves in the earth and assume a tuber-like behavior. Getting a fork he dug up some plants for us, and they were well laden with solid "nuts."

THAT IS A FRAUENHEIM (a home of a woman).—When I removed the wrapper from GARDENING of September 1, and saw the front page picture, and before I read anything I exclaimed, "That is a Frauenheim!" and truly I was not mistaken, and there she sits on the balcony too. It is my ideal of a home creation.

MRS. WILHELMINA SELIGER.
Hartford, Conn.

DOUBLE YELLOW FLOWERED NASTURTIUMS.—"I was in New Haven, a year ago, and I saw a plant of it in a lady's garden, and I begged a few cuttings of it from her and that's how I came to have it and all I know about it," remarked Mr. Dean of Brooklyn to us the other day, as we noted a profusion of this nasturtium in his garden. The flowers are large, full-double, fragrant, beautiful, and stand up stiff on strong stems. It is really a desirable plant, but it must be grown from cuttings.

PROPAGATING THE PINEAPPLE.—Noting a vigorous young pineapple plant growing outside in a gardener's yard some days ago we asked about it. "Well, I came by that innocently enough," he replied, "A friend brought me the crown from a pineapple fruit one day early in the summer, and asked me if I could propagate that. I took it, and just here where we stood I set it on the ground giving it a good squeeze into the earth with the heel of my boot, and there it is, that's all I ever did to it."

POT UP YOUR LILIES.—James Dean of Bay Ridge, Brooklyn, is one of our largest growers of Harrisii lilies in the country. We called on him the other day and found that he had all of his lilies already potted and set out of doors, close together, on top of ground in an open cold frame, with a little hay spread over the pots. All were there, both those required for Christmas and for Easter flowers. Those required for early use will soon be brought indoors to warmth, and those for late will be left out for a while yet.

A DWARF FORM OF VICTORIA REGIA.—A diminutive form of the Amazon royal water lily was one of the curious things we saw in Prospect Park, Brooklyn, the other day. Its leaves were perfect Victoria leaves but only about 2 feet wide, but its flower buds were a puzzle, they were somewhat different from those of the big Victoria. The plant when we saw it was in full foliage and had flower buds but no open blossoms, and it was growing in a tank with its big namesake. Mr. Pettigrew got it from Mr. Tricker.

"ISN'T IT AWFUL," remarked a neighbor to us one day as we stood by a field hip-high with ragweed, white weed, fox tail, burdock, teasel and other weeds, "but what can I do, the owner doesn't care a cent how it looks, he is simply holding on to the ground knowing its appreciation in value, and our lawns have got to suffer from infestation from those seeds." Some days after that we again met him; "Well, I couldn't stand it any longer so I hired a reaping machine and mowed down the weeds in that pest field; it was the easiest way out of the difficulty."

FLOWER-BED DESIGNS.—We may decry formal flower bedding all we wish to, but in popular public gardens, more or less of it has got to be done, therefore let us do it as neatly and prettily as we can. It will help us greatly another year if we make designs of the beds we now have, no matter how crudely these tracings may be and note the materials with which they are filled, and the fitness or unfitness of the several plants used in their make-up. Also note your neighbors' beds and the behavior of the plants in them. The memory is treacherous, better trust to your note book.

The "SINGLE-FLOWERED" HYDRANGEA PANICULATA was the most showy and conspicuous shrub in bloom in the Boston gardens when we were there Sept. 18-19. The "double" *grandiflora* form was fast

fading, but this "single" one was in its prime, and really a more elegant flower than its bigger and stiffer "double" form. Of course this "single" one is the typical or wild form, but that doesn't detract from its merits. There are two forms of it however, one that blooms and is nearly over before the "double" one comes in, and this other that succeeds the "double" one. Be sure you get all three.

RAISING NYMPHÆAS FROM SEED.—Near the margins of the water lily ponds in Prospect Park, Brooklyn, we noticed several flower pots filled with soil, and sunk almost to their brim in the water, with a pane of glass over them. "What have you got there?" we asked Mr. Pettigrew. "Oh, those are our seedling nymphæas," he replied. "We save seed from some of the earliest flowers, and sow it at once, and sow it in this way, and the seedlings come up right away and we get a good start with them before the winter sets in. We can keep them in small space over winter, pot them off singly in spring and get fine flowering stock for next year."

BRAINS AT A DISCOUNT.—The editor of *Gardening World* suggests that no doubt the name "Ice King" as applied to a certain low-growing, large, white-flowered *œnothera* or "evening primrose" was originally a mistake or misspelling of the word "evening" by the label writer; or it might have been due to a slip of memory after once having heard the name. After laying awake for a whole blessed night trying to think of a good catchy English name for that little *œnothera*, and deciding on "Ice King," and then have you get up and tell us it must have been an accident is more than one of our leading florists is likely to appreciate. No, indeed, "Ice King" was a well studied "accident" for profit.

THE TREE IVY (*Hedera Helix* var. *arborescens*) is the common tree ivy of Europe. While the common ivy clings close to the trees or walls to which it attaches itself, its tree form throws out stout woody branches in fact not unlike the way in which our poison ivy branches out. Of course these branches are leafy and evergreen. It is not as a clinging ivy that we value this plant but as an evergreen dwarf shrub, and although it is slow growing it is very pretty, and it bears a profusion of greenish yellow flowers late in summer, and as these raise well above the foliage and are quite numerous the heads are quite showy. There is a growing demand for this ivy for park purposes, and some "wide-awake" florists are pushing its propagation.

DRIP IN GREENHOUSES.—Note it now and have it attended to. Rain drip is bad enough but it is nothing like so injurious as ice drip. It is most apt to occur along muntings, and crossbars, and the valleys in the roof, and especially along the under line of the ventilators. This drip dropping day after day on a plant will destroy the sturdiest ironclad in cultivation. It has perforated holes in our Victoria leaves, rotted the crowns of tree ferns, spotted the palms, and so on; it is a hidden and often unsuspected foe, but never an innocent one. See that the glazing is tight, that proper channels are prepared for the ready escape down the sashbars of the drip, and that galvanized gutters are fixed up under the valleys; in fact do anything that your ingenuity can suggest to stop the evil.

THE BOSTON FERN, or as some people call it, the Boston Sword fern, is one of the best, most vigorous and satisfactory



AH WING, A CHINESE GARDENER IN CALIFORNIA.

ferns that can be grown for pot, bracket or basket work in dwelling houses, and its fronds last long and well when cut. Its botanical name is *Nephrolepis exaltata* var. *Bostoniensis*. It is a fast grower making many fronds from 12 to 30 inches long and throwing out a large number of thread-like stolons that when they touch ground take root and start into new plants. Although Boston had a monopoly of this fern for a long time its fame has got beyond the Hub and now it is being grown by thousands in other towns; in one florist's place in New York we visited the other day he had four large span-roofed greenhouses entirely filled with this fern and he was pretty happy over it.

DIRTY POTS IN THE GREENHOUSE.—A gentleman, an enthusiastic beginner in gardening, was walking through the conservatories with us the other day when he stopped, and pointing to some half-dirty pots, remarked: "What of all this talk in the paper about having ones flower pots kept so clean, clean both inside and out, and see these pots are dirty, they are covered with green?" Now every flower pot in that greenhouse had been washed clean three weeks before then, and at that time they were only half-dirty, but the point struck right home and next morning was wash-day in that compartment. Some pots, by reason of the earth within them being kept wetter than in others, get green sooner than the others do; look out for such and wash them twice as often as you do the others, else you too may be "called over the coals."

NO YANKEE CORN OR PUMPKIN PIE FOR ME is the outcry of a happy Briton in the *Gardeners' Chronicle*. He writes "As to the green cobs * * delectable as they may be to Canadians and citizens of the United States, they do not take on here at all. We have a wonderful wealth of fine vegetables in this country, far beyond what America can furnish, hence there is less need here for such a vegetable. * * The British people are no more attracted by green corn cobs than by pumpkin pies." Such darkness and corruption of palate! The Americans are satisfied to eat the corn, they don't care to tackle the cob. When it comes to pumpkin pie, though why, bless you, man, you know not whereof you speak, but how could you? You never were in America and never tasted an American pie, so we pity you. *Sub rosa* stick to potatoes and myosotis, you know a good deal more about them than you do about sweet corn or pumpkin pie.

OLD WELL ROTTED COW MANURE.—"What soil do you use for those chrysanthemums?" asked a visitor here the other day. Sod loam and some old cow manure," we remarked. "Good," he replied, "that's just what I want to see. I've been trying to get old, well-rotted, cow manure since a couple of years, and have the greatest difficulty in finding it so I would like to see what your's is like." We lifted a handful of the soil with some lumps of manure in it and showed it to him, when a painful look of disappointment spread over his face. "Why," he exclaimed, "I can get lots of stuff like that. I thought it had to be dry, earthy

fine, many years' old stuff!" No, no, that idea is wrong. Cow manure is old enough, and rotten enough for potting or other compost purposes, as soon as it is free enough to handle, to chop up and mix up with soil, without being pasty; just as soon as it loses that wet, sticky nature of fresh manure it is old enough for garden pot purposes.

DIPLADENIAS—We wish to call your attention to our fine pictures of these splendid tropical vines in this issue. These pictures are half-tones engraved from photographs, hence they are the absolute truth; they show the plants and flowers just as they existed with their every perfection and every fault. We have a reason for noting this: Some years ago a prominent American gentleman who knew plants well, and loved them and who owned a large collection of them, both hardy and tender, saw a most fascinating picture of dipladenias as grown at Sion House, England, in one of the London horticultural journals, and as he was on the eve of visiting Europe, when he got to London he made a special journey to Sion House to see that plant, and when he saw it he was bitterly disappointed. The picture showed a plant of luxuriant growth, full and perfect foliage and having an extravagant crop of big open blossoms, it was a wood cut made from a doctored drawing; the plant itself was only of common merit and nothing like as good as shown in the picture.

JOHN CHINAMAN AS GARDENER.

China is called the "Flowery Kingdom," and it would naturally be supposed that Chinamen would make good gardeners. During the many years in which I have been interested in floriculture in California I have had opportunities to compare their abilities with those of various other nationalities. The latter, however, have come and gone, but Ah Wing, represented in the picture, has remained with me. He has his peculiarities and imperfections and sometimes is a little sulky, but he is industrious, faithful and reliable. He never wastes any time and is always willing to follow instructions. He takes as much interest in the place as it belonged to him, and to have things "high-toned" is his ambition. He is much distressed if anything goes wrong.

He came to me several years ago, a common unskilled laborer, having been field-hand, miner, cook, vegetable gardener, etc., I engaged him for two or three weeks' work, and liked him. At the end of that time he came to me and said: "I heep likee work for you. I likee work for you long time. No likee change." His "No likee change" pleased me. I determined to give him a trial, and have never regretted it. He said, after I engaged him, "You look see some man, workee heep good. You no look see, he heep lazy. I no that way. I work alle same you no look, no lazy tall." He has no patience with lazy men.

He has twice left my employ for a few weeks, once to raise beans for himself, and once because he became most too important, but his anxiety to return both times was so great that I took him back, for I missed his faithful and intelligent service. He is very slight and thin, not weighing over one hundred pounds, and is not able to do heavy work, but he does all the irrigating, waters greenhouses and lath houses, gathers and cleans seeds, sets out plants, superintends the other Chinamen when I have Chinese help, and can be trusted to do well anything he understands.

Not long since after gathering some

grasses for decoration, he brought them to me to receive instructions where to put them, as seen in the illustration. He was utterly unconscious of his unusual appearance, but looked so picturesque with the dainty grasses hung over him that I sent him to the photographer. He delights in having his picture taken, and while he was indulging in a delighted grin the artist caught it unawares, before he could assume his usual dignified expression. T. B. S.

YOUNG LADY GARDENERS IN BLOOMERS.

When I was in London a few weeks ago I went out one day to see the Royal Botanic Gardens at Kew, and how I wish you had been there too, for it surely is the greatest plant repository in the world. Oh the innumerable variety of plants that is there, outside and inside, every kind of plant that one can think of is there and hosts I never heard of before, let alone ever saw. But there wasn't a plant in all the broad acres of Kew or its villages of glass houses that interested me more than did the young lady gardeners there! Young, bright, pretty, active and interested, there they were a-hoeing among the plants in the herbaceous grounds, watering the pots in the greenhouses, propagating in the pits and doing all manner of professional work that the young men gardeners were doing, and neat and natty were they at it too. But they wore bloomers—blue bloomers, with large apron fronts, light colored waists, and stiff straw hats. They are young lady graduates from the horticultural school at Swanley, in Kent, and I am informed are at Kew taking a finishing course in practical horticulture and systematic botany. That they are handsome young women I allow, that their chosen avocation is one of the noblest, purest, and most interesting on earth I know to be the truth, then why cannot they do as good work and be as useful in the garden in women's clothes as in the pseudo-garb of men? Kew, oh Kew, give them back their petticoats!

Boston, Sept. 18, '96. J. K. M. L. F.

ROSES—CLEMATIS.

C. F. D., Keokuk, Iowa, asks: 1. "When is the best time for setting out 2 year old hybrid tea roses?"

Ans. About the middle of April in Iowa.

2. "Name a few good hybrid tea roses."

Ans. Augustine Guinoiseau, white, slightly tinged with flesh; Duchess of Albany, deep, rich pink; La France, silvery rose; Madame Caroline Testout, clear pink rose; Meteor, velvety crimson; Pink Rover, pale pink; and Souvenir de Wootton, rich red.

3. "Name 6 best everblooming climbing roses."

Ans. There is no rose hardy in Iowa that is everblooming.

4. "Best time to transplant established clematis plants?"

Ans. As soon as the ground is mellow in spring.

HORSECHESNUT TREE LEAVES BURNING IN SUMMER.—In answer to S. A. H., Indiana, would say, that one of the drawbacks to the horse chestnut is leaf disease and early denudation. A deep, rich soil, well drained but with considerable moisture in summer suits the tree very well and tends to the health and retention of its foliage. What ails the individual you speak of we are unable to say; if it is a fungoid disease, better submit some of the diseased leaves to a fungus specialist, such as Dr. Byron D. Halsted, New Brunswick, N. J., or to the Agricultural Department at Washington.

Fruits.

HOW I GROW GREENHOUSE MELONS.

To grow the English varieties of melons a greenhouse is needed; we get good crops of them with very little trouble. The greenhouses being about empty in summer we devote one of them to melon growing. The English melons for beauty and high flavor are far superior to the common run of field-grown melons.

I start the seeds about the 15th of April and have ripe fruit by the first of August. The seeds are planted in a 3-inch pot, three seeds to a pot, and after the seedlings come up one of them is pulled out and the two strongest ones left; after they are well rooted they are ready to be planted. I make small compartments of brick on the benches using eight bricks, two deep edgewise; in these little compartments the soil is put, consisting of three parts loam to one of old cow manure, putting a layer of rough sods in bottom for drainage. When this compartment is full of roots, move the bricks out about six inches away from the roots using more bricks (but no higher than two deep), then fill in the space with more of the same compost, using it in a rougher state, chopped sods are good. When this again is full of roots more soil may be given, but it is best to wait till after the fruit is well set and has started to swell. This last soiling may be of a richer nature and move the bricks out this time at least a foot. When the roots begin to come to the top give a top dressing of loam and manure in equal parts. Manure water in their last stages of growth will help them greatly.

These melons must have something to run on. We use screw eyes nine inches long, screwing them into the rafters about a foot apart, using five screws to each rafter, that will give the melon vines about six feet to run on and when they run to the top of that nip the ends off the vines, in the screw-eyes run wires all the length of the house and tie the vines to them, also cut out all the weak shoots that start from the main vine, if there is no fruit on them. But as it is upon these little side vines the fruit is, it is best to leave them till the fruit is set before cutting out the blind ones. Eight melons to each compartment will be enough, that will be four to each plant.

Keep the vines tied up to the wires; they will need going over mostly every day as they grow fast when they once start. Don't neglect to give them plenty water, they will take it most every day and when water is given give enough till it runs through the bottom of the bench. In their young state give them a good syringing morning and evening. When they begin to show their flowers the syringing should be stopped till after the fruit is set, but in all hot days keep the floor of the house continuously moist, else red spider will be sure to appear.

Melons grown in the greenhouse need to be fertilized by hand, although bees are sometimes plentiful in the greenhouse, it is best not to trust altogether to them. I generally go over the flowers on all bright days. The most simple way to do is to remove the male flower picking off the petals and then dip it into the other blossom. Nip out the end of all the lateral shoots or vines that have fruit on them

two leaf joints beyond the fruit, that will cause the fruit to swell faster. When the melons are quite large give them some support or they may break the vine down. I use bass matting, running it around the melons and tying them up the wires. The fruit when ripe will break away from the stem, they can then be put away for a few days and then they are ready for the table. The wire and screws can then be taken out and stored away for another year to give room for your winter plants.

Mahwah, N. J.

DAVID FRASER.

Mushrooms.

GROWING MUSHROOMS IN SUMMER.

I wish to know if there is any kind of mushroom spawn that can be planted on the ordinary lawn so that mushrooms will grow freely there. The common meadow mushroom, *Agaricus campestris*, grows quite plentifully in the fields hereabout, wherever manure has been spread. If spawn will grow under the above conditions, what kinds is to be preferred, where can it be obtained, and how and when should it be planted? Would partial shade or full sun, a damp or a dry spot in the lawn be better? (2.) Can the mushroom be made to grow at other times than in late summer or early fall?

Chevy Chase, Md.

C. H. V.

The cultivation of mushrooms in the open lawn is a precarious job and not at all a matter of certainty. Select an open lawn or such a place as you would find wild mushrooms growing in, and in May, if the weather is dry, plant a lot of good, English brick spawn in it, placing the pieces of spawn two to three inches under the surface of the soil, tamping down the soil on top of spawn. Or, better still, cut and remove a piece of sod a foot square or thereabout, and dig out a good spadeful of earth, and fill up the hole with dry horse droppings tamped down very solid; into this put a piece of spawn and lay on the sod again. If the summer is moderately dry you are apt to get a good crop of mushrooms in late summer or fall; if the summer is very wet, the spawn is apt to rot and the crop miss; still we have known the unexpected to happen in this summer crop. You can get good spawn from Dreer or other seedsmen advertising in GARDENING.

2. Yes, mushrooms under special conditions can be grown every day in the year, but during the summer months they become so infested with maggots that we find it does not pay to cultivate them artificially. "Then how about the wild mushrooms, why aren't they maggoty?" you may ask. On that point you had better ask no question for conscience sake; instead, take up a two days' open wild mushroom and break it apart, every little pin hole you see in its flesh is a maggot hole. But these little maggots are not poisonous at all, nor do they detract in the least from the flavor of the esculent.

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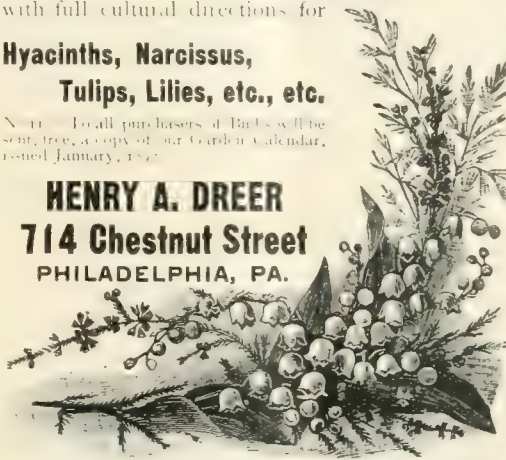
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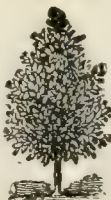
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THE AMERICAN DAHLIA SOCIETY.

Last year a few lovers of the dahlia organized a society for the purpose of encouraging the cultivation of this very beautiful flower. Their first exhibition took place at St. George's Hall, Philadelphia, recently and was a great success. To all, the dahlias were a surprise, and more than 500 varieties were shown. It was plain to be seen that the public appreciates the departure from the stiff ball form of the old dahlia to the newer, looser and more graceful cactus forms. Among these were found the gems of the show.

WM. AGNEW, a new variety, was the largest flower exhibited and attracted universal attention owing to its size, fine shape and bright color—a deep dazzling scarlet; the petals are long and beautifully twisted.

CLIFFORD W. BRUTON was considered the best yellow cactus dahlia, the flowers are 6 inches in diameter, perfectly full to the center and of a solid pure yellow.

MRS. W. H. MAULE took the prize as the best new seedling entered in competition. It is of cactus-decorative form and of bright crimson color, shading towards purplish blue.

LA FRANCE, also a new dahlia, was awarded first prize as the best pink.

NYMPHÆA was shown in abundance, proving it to be a favorite. Taking in mind its many good points it is undoubtedly the best dahlia in this country. While not a true cactus dahlia, it is classed as such, it is really a decorative form. It can best be compared to a "pink water lily with one hundred petals." Two prizes were awarded to it.

SNOW CLAD, a very pretty pompon, took a premium as the best white of that class.

FRANK SMITH, an old variety, come in first as the best tipped one.

OBAN got first prize as the largest flower shown, but it was exceeded in size by Wm. Agnew, which was not entered for size.

The great feature of the show was a floral design made of dahlias representing an immense shield, in the center of which was represented a huge dahlia, each petal of which was a full size flower of La France, the whole resting on a "field of dahlias." The piece received a silver medal and was exhibited by Mr. Wm. H. Maule. [As we did not see the "piece" we cannot give an intelligent opinion about it, but we would ask what useful lesson did it teach? Dahlias are such substantial, lasting flowers that we can make most any design out of their blossoms, but, good land! isn't such a use a desecration of this noble old flower? Away with your "designs" and give us dahlias in all their glory with long and leafy stems and in open array. The cactus dahlia has gained in favor because of its more artistic make-up as compared with the globular stiffness of old favorites; and the single flowered dahlias, as cut flowers, are preferred to any because of their less formal shape, and greater intrinsic beauty.—Ed.]

From the great interest shown by the public in their exhibition it is safe to assume that dahlias will be grown extensively next year.

Among the many the exhibitors were Wm. H. Maule, W. P. Peacock, A. Blanc & Co., W. Atlee Burpee & Co., H. G. Faust & Co., Henry F. Michell, Taylor Brothers, who showed a sweet-scented single dahlia, and others.

The Cornell University of Ithaca, New York, showed over 250 varieties of dahlias.
A. BLANC.

A FEW COMMON SENSE FACTS!

For
Agriculturists
and Home Owners.

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Third. In any and all markets of the world to-day it takes 30 pounds of silver to buy *one* pound of gold. Now,

Fourth. *Why, oh! why,* should a few (less than 100) mine owners ask any reader of this paper, as a conscientious voter, to allow them an *unlimited* coinage and insist on the Government stamp being put upon it, *at the ratio 16 pounds to 1?*

What does this mean? It simply means an enormous profit to them (the few) and a big loss to every producer.

The American Voter Must Think!

and if he thinks, he will not vote for unlimited free silver.

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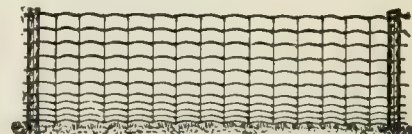
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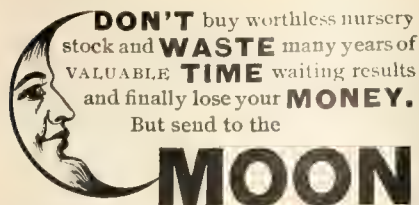


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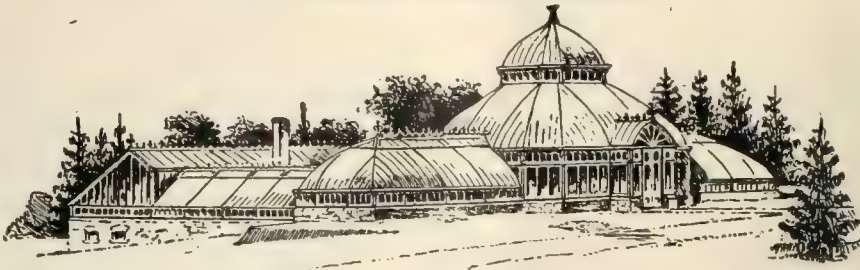
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No. 99.



THE HOME OF MR. H. C. BURROWS, TARRYTOWN, N. Y.

Landscape Gardening.

MY HOME AT TARRYTOWN, N. Y.

Having experienced so much pleasure studying the illustrations in GARDENING, which I have taken for the past three years, and having had taken recently the front view of our house and grounds, I thought perhaps some of your readers might enjoy a view of the *Clematis paniculata* in a "go-as-you-please" sort of a way, and send you a photograph of it. This vine stands under the bay window nearest the veranda, and the only training it has had is towards the left on the trellis, one spray was led to the right and then allowed to have its own way. This branch to the right explored the inside of the bowed blinds, coming out to the sun light at the top in time to bloom.

The house fronts the south and the shade trees on the street are maples. Since this photograph was taken a hedge of California privet has been planted inside the fence along the front, the whole stretch being in a flickering shade. A border with irregular front has also been planted with shade loving plants.

The group to the right of the gate contains azaleas, rhododendrons, andromedas, etc. To the left of the gate is a large bed, 85 feet long and 6 feet wide, containing choice rhododendrons, azaleas, lilies, phlox, oriental poppies, hypericums, etc., ending with a vigorous Norway spruce.

Extending beyond this for 75 feet is the grape vine trellis ending at an old apple tree on which are the white and purple wistarias; under the tree is a summer house covered with vines such as roses, honeysuckles, clematis, etc. The children's swing is just south of the summer house. The vine on the corner of the veranda and on the wall, in picture, is the *Ampelopsis Roylei*. An old telegraph pole about two feet away from the wall is also covered with the same. It is another case of "go-as-you-please" for this vine found the pole without any help and appropriated it. The plants along the base of the wall are nasturtiums in variety. The rose on the corner of veranda is the Crimson Rambler. The group in front of this is made up of Japan maples, Japan berberis and the dwarf evergreen one. The last named is also under the bow window in the front.

Tarrytown, N. Y. H. C. BURROWS.

The lay of the land, the character of the house and its environment, and the inclination of the owners have a great deal to do with its external decoration as regards plants and vines, and only one who has studied the subject right on the spot can suggest intelligently what should be done about it. Having never seen the property and knowing nothing more about it than is shown in the picture, pardon us for making a few suggestions: we would cover that fence from end to end with *Clematis paniculata*, *C. Flammula* and *C. coccinea*, planted on the inside, and cut down to the ground every winter like herbaceous plants. All or them like this treatment and grow rapidly and bloom full in summer. Just such a fence row as we suggest (but with *Clematis paniculata* only) runs along the public street as yours is, in front of Mr. James Farquhar's garden at Roslindale near Boston, and when we saw it a month ago, it was a belt of fragrant glory. Then running along by the eaves at the top of first and second stories we would hang a light iron rod, continuing it up the edge of the slope of the roof to top of second story,

and on it run wistaria vine. At the right side corner from the floor of the veranda to corner of gable top of second story we would run another vine, may be akebia; and up the middle pillar at left hand side of house we would run some more vines, say a *Halleana* honeysuckle.—Ed.

A GARDEN AT OCONOMOWOC.

Having occasion to visit Oconomowoc, Wis., which is one of the most delightful inland summer resorts I have yet seen, I fortunately met Mr. H. H. Shufeldt, who was the first to perceive the beauties of La Belle lake with its silvery water, its well timbered rolling banks, and the advantages which have now made Oconomowoc one of the most delightful spots on earth. It is thirty years since Mr. Shufeldt first went there and from that day he has been head and front in the development of the lake surroundings and the city.

Mr. Shufeldt has a property of 100 acres having a frontage on the lake a mile long and with half a mile boundary on the main road. There are fine native trees as oaks, ashes, hickories, maples, basswood, hackberry.

The grounds are rolling and the highest point above the lake is 60 feet. There is a view on one of the lawns fully half a mile on which are grouped such trees and shrubs as thrive well in the neighborhood. Mr. Shufeldt has been digging away at horticulture ever since he set foot on "Anchorage," for that is the name of his place, and hundreds of varieties of fruits, shrubs, trees and other plants have been tried in that time. Those that were found worthy were adopted, those found wanting destroyed. The severe cold in winter is very trying to vegetation, as the thermometer frequently goes 30° below zero and there is always a spell of two to three months of very low temperature.

Some specimen trees growing there are worthy of separate mention, there is a white elm that was planted in 1878, then two inches thick at the ground line, and to-day it is twenty inches in diameter and fifty feet high. A large group of *Rosa rugosa* loaded with its brilliant colored hips is the best I have ever seen; all who have a sunny spot should plant *Rosa rugosa*; it is frost proof, insect proof, mildew proof, and always beautiful.

Delphiniums have stalks as thick as broom sticks, and bear flower spikes between two and three feet long. *Spiraea palmata* has leaves as big as those of the grape vine. Two sugar maples over a century old have spread of branches over 40 feet; the tops were cut off many years ago. Mr. Shufeldt placed over the cut a tin roof, which is worthy of note as it prevents the possibility of water lodging in the centre. And there are several plants of *Syringa Japonica* 12 or more feet high.

A cold grapery 50 feet long containing twelve vines carrying an immense crop Mr. Shufeldt says is one of the most satisfactory features on the whole property. Our late friend Mr. Peter Henderson was the champion of the cold grapery.

There is also a conventional water garden composed of half hogsheads in which are *Nymphaea Zanzibarensis*, *dentata*, *Devoniensis* and *chromatella*, the centre being formed of nelumbium and they all stand above the ground level, the tubs being buried in rockwork. The lilies flower freely. Does the rockwork retain the heat? Is this a "wrinkle?"

The following list of trees, shrubs and herbaceous perennials I found perfectly

hardy and in good condition at the "Anchorage."

TREES.—Ash, alder, basswood, birch, butternut, catalpa, cherry, white and English elms, hackberry, hickory, ironwood, box elder, sugar, soft, Weir's and Norway maples; mountain ash, many oaks, poplars and willows.

DECIDUOUS SHRUBS.—*Althæas*, Chinese aralia, common and purple barberry, mahonia, *cercidiphyllum*, *clethra*, *Deutzia gracilis* and *D. crenata* and vars., elders, *Elæagnus longipes*, *exochorda*, *euonymus*, five kinds including *Yeddoensis*, bush honeysuckles, *Hydrangea paniculata* and its varieties, *kerria*, *Viburnum plicatum*, *Sieboldii*, and eight other species [*V. plicatum* is complained of as not being satisfactory in the west.—Ed], *weigelas*.

EVERGREENS.—Austrian and Scotch pines, Norway balsam, and hemlock spruces; American arbor vitæ, red cedar. A neighbor of Mr. Schufeldt's has a lovely bed of the Colorado blue spruce.

HARDY PERENNIALS AT OCONOMOWOC.—*Bocconias*, *campanulas*, *delphiniums*, *funkias*, *heleniums*, *sunflowers*, *hemerocallis*, everlasting peas, lilies, *lychnis*, *pæonies*, *pyrethrum*, *spiræas*, *Yucca filamentosa*, and *eulalia* and *erianthus* grasses.

JOHN THORPE,

Chicago.

FINE PLANTS IN NORTH CAROLINA.

Yucca aloifolia and its variegated form are perfectly hardy here, and I know one fine specimen growing on sandy soil at a point 600 feet above the sea level. On our lower coast the Oonshiu orange is still living, and in all our coast country we have giant gardenias. At Greenville, in Pitt Co. I saw recently a camphor tree that was planted over ten years ago, and cut down badly by the cold of 1894, but still living, and in the same town the collection of camellias is worth a journey to see. In Columbus I measured the largest camellia I have ever seen. The trunk just above the ground measured 49 inches in circumference, and the thousands of buds, then in December just getting ready for the annual bloom were so numerous that we gave up in despair the effort to estimate their number. In the same lawn, and on the opposite side of the entrance walk was a Portugal laurel about as large as the camellia and both the plants were probably the most perfect specimens in this country. On Smith's Island, the northern limit of *Sabal Palmetto* in this state I have cut leaves that measured five feet by seven with a six foot petiole, growing in the native forest, while all around there towered specimens with stems fully 25 feet to the leaves. I find great difficulty here with Chinese azaleas in our hard clay soil, not that they do not winter well enough till the hot summers weaken them. In the sandy land of our coast region they grow to great size, and I am preparing to give them special beds, as for rhododendrons in a new garden I am laying out. *Pittosporum Tobira* is a puzzle to me. It stands our ordinary winters without a scorched leaf, and yet in 1893 it was entirely killed, while an oleander near by it is still living though at that time cut to the ground. As oleanders need careful protection here in any winter, the survival of this plant when the *pittosporum* that I never thought of protecting, died, I can hardly understand. We find that *Erythrina Crista-Galli* winters finely under a mound of sawdust, and one of the finest plants we have ever seen has been thus kept on a Raleigh lawn for the last twelve years, and its bloom is a sight worth seeing. In



BOUVIER CANNAS. CALADIUMS. ZINNIAS AND MR SHUFELDT'S 3 YEAR OLD GRANDSON.

my experiments in wintering half hardy shrubs I have found nothing equal to the sawdust mound. By the by, my *Nerine Sarniense* are now in splendid bloom, and the pretty foliage will soon come to remain all winter. It would be interesting to know how far north these bulbs are hardy. I formerly grew them in pots altogether in Maryland, and keep some so here, but their season for bloom, and their entire hardiness, make the effort useless, and I shall turn all of mine out.

Raleigh, N. C.

W. F. MASSEY.

Trees and Shrubs.

HAMAMELIS VIRGINICA. (Witch-hazel.)

This well-known American shrub, first described in 1736, almost becomes a small tree in this section. Here its habitat is chiefly along the upper slopes of the ravines where it grows as an under shrub. Herein lies an important feature in connection with it. The situation it occupies is a trying one to most plants, being in a dry, steep bank and subject to the drip from the overhanging tree foliage. Furthermore, the spreading palm-like manner in which its foliage is arranged makes it a pleasant object to look down upon, particularly so at this season of the year, when it is in the full glory of its autumn color, and it is tassellated with clusters of thread-like yellow flowers, often having for companions the ripening seed pods of last fall's blooms. The color of the leafage all summer long is a pleasing shade of green, which as the winter approached commences to turn yellow at the edges, and for some time some specimens rival *Cornus Spæthii* in their variegations. Often the centre of the leaf

retains its rich green up to the well defined band of yellow—often a quarter of an inch broad and extending all around the leaf. Others seem to choose a solid yellow for their color and contrast well with the vivid reds of the dogwoods in more open spaces. Later on the leaves drop, but the yellow tassel-like flowers remain nearly all winter, and again present a pleasing picture to look down upon. [But don't stop at our common native witch-hazel, please remember that Japan has given us two others, one with yellow flowers, more showy a good deal than ours and later in blooming; and a wine colored one. Both are hardy at New York, and desirable shrubs.—Ed.]

W. C. EGAN.

Highland Park, Ill., October 6.

RELIABLE NURSERY STOCK.

I intend buying some more fruit trees this fall but do not know where to place the order to get the most reliable sorts. As I have tried several nurseries but do not believe the trees received from them are the same as they sell them for, and I thought of asking you if you would kindly advise me of where you think I could buy a good reliable stock. O. H. Mt. Jewett, Pa.

In addressing this inquiry to us your head was level, you have done the best thing you could do. You have made a big mistake, however, in not mentioning the names of the "several nurseries" that you have tried. Please take up an issue of GARDENING and look at the nurseries advertising in it. You surely don't mean to say that one of them would supply you with stock that is not true to name; we don't believe it would. Now we know something practically about the nursery business, and we also are large buyers of nursery stock, and we have a pretty good

idea of who are and who are not the reliable nurserymen of the country, and we must tell you candidly that better or more reliable nurseries than those you find in our advertising columns you cannot find on this side of 'the Happy Hunting Grounds.'

A TREE-ARCH OVER GATEWAY.

I want a tree to plant on either side of the entrance to a cemetery lot that can be trained to twine or meet overhead, making a natural gateway. What would you recommend for such purpose? The lot is enclosed by a hedge of *arbor vitæ globosa*.

A. W. C.

Joplin, Mo.

The idea is not a pretty one, in fact it is puerile, and we don't believe you would ever be satisfied with the result. Our advice is, don't do it. If you want something of the kind, set out a good plant of deciduous cypress at either side of the gate, and with a light iron rod form your arch to suit yourself; now plant a vine beside each tree and run them up over the arch so as to meet and cross at the apex or centre. Wistaria, celastrus, periploca and actinidia are good vines for this purpose.

DEUTZIA GRENATA VAR. PRIDE OF ROCHESTER.

When Thunberg found this genus in Japan and named it after his patron, the Dutch naturalist Johann Deutz, he introduced to the floral world a charming plant. From the type have been produced several varieties. By far the best with me is the Pride of Rochester, it blooms about the middle of June. I grow several varieties of this genus, and although all are protected in winter, this one alone seems satisfied with its condi-

tions. It is extremely floriferous and graceful in contour. The flowers are large for the genus, double white, with the outer side of the petals tinged with rose. It is a worthy representative of this enterprising firm. W. C. EGAN.
Chicago.

SCORPION SENNA.
(*Coronilla Emerus*.)

This is a little bushy shrub, three or more feet high, a native of southern Europe and hardy from Philadelphia southward; at least it is hardy in warm, sheltered places. Our illustration is engraved from a photograph of a little sprig of it in bloom taken at Dosoris a year ago last spring, and it shows better than any other picture we ever saw of it the true nature of the shrub and its manner and profusion of blooming. The flowers are small, yellow, and on account of the vast multitude of them quite pretty. As a bush it makes a thick mass of small branches with clover or pea-like leaves, and the flowers are of pea form, and reddish, changing to yellow. Where it is hardy, it should be grown freely; and where it is only precariously hardy it is worth protecting in winter. It is quite cheap in nurseries and easily raised from seed, division or sprouts.

THE CHINESE GOLDEN ARBOR VITÆ AT DOSORIS.

(*Biota Orientalis aurea*).

Here is another of the inimitable Dosoris pictures of garden trees, it shows a perfect specimen of the golden Chinese arbor vitæ about nine feet high and over seven feet through, unbroken and without a blemish from the ground to the tip. And still it is only one among a host of others of different genera and species in the same group, and all equally perfect. We mention this to show how easy it is, with love and timely attention, to obtain and preserve perfection in the health, form, and development of fine trees, and still maintain fullness and beauty in grouping, and fine effect in planting. In our picture a broad leaved hemlock at the side and a pseudolarix at the back appear as if pressing up against the arbor vitæ, but they are not doing so; we would not plant the arbor vitæ within reaching distance of the pseudolarix, and the moment the hemlock would touch it we would shorten in the hemlock branches and eventually cut it out.

Although the Chinese arbor vitæ are quite hardy at Dosoris and New York, in rigorous parts of the country they are not so, but excellent substitutes for them may be had in the finer golden forms of the American arbor vitæ, which are very hardy. This form of the Chinese arbor vitæ becomes very golden in early summer, but, curious enough, in fall it changes from yellow to bronze brown, in spring time again it reverts to its fresh yellow hue. The same thing is noticeable in some of our retinosporas, notably *ericoides* and in Douglas' golden juniper.

The Flower Garden.

FLOWER GARDEN NOTES.

PAROCHETUS COMMUNIS (?), catalogued as a novelty. Common name shamrock pea. As Nicholson says this is a handsome flowering plant, I should like to have some information as to growing it. One plant in a tub and the other in open

border both failed to grow, finally dying outright. They were planted in ordinary garden soil, receiving fair amount of sunshine and water.

LOTUS PELYOURENSIS, probably *pelio-rhyncus*, as given in Nicholson. The same



SCORPION SENNA.

remarks as above apply to this. I have been given to understand that it has never bloomed in this country. The plant is graceful and delicate, and would be pretty even without the bloom, if it would live.

AERVA SANGUINEA. Another novelty, not found in Nicholson. Is a low growing, half-trailing plant, with blood red leaves, and useful for basket or vase. Judging from the style of the inflorescence, I should say it belonged to the *Amaranth* family. [The generic name is *Aerva* or *Erva*, and it belongs as you suggest to the *Amarantus* family.—Ed.]

BASELLA. (Malabar Nightshade). The thick white and green leaves of this plant make, as the catalogue says, a good contrast with the *Aerva*, if planted together. It is of easy culture under ordinary conditions. The flowers are very small and inconspicuous, yet after all, they are pretty enough. They are arranged on a long stem at the end of each branch, light pink, but turning later into a little yellow ball.

CLEMATIS PANICULATA, as everybody knows, is magnificent, but what I want to impress upon everybody is the fact that it will flower almost as well facing northeast as in a sunny exposure. This clematis on my back porch, where it gets the sun, is a solid sheet of bloom, while on my front porch, facing northeast, it assumes a more delicate appearance, although covering the whole front. I use nothing except chicken meshing to train it on.

CLEMATIS HENRYI. A small root of this planted in the spring gave one bloom this month. I look forward with eagerness to next year, if this one flower is a sample of what the vine will be when in full bloom. Jackmanni is "not in it" compared with this enormous white flower of seven petals.

HELENIUM AUTUMNALE (?). I ordered a novelty called *aureo-striatum*, but I guess I have *autumnale*. However, I am well satisfied. Each single stem spreads out to a large head, covered with hundreds of clear yellow flowers. It seems to be an economical plant, spreading at the roots. Planted by accident close to two clumps of *Boltonia latisquama*, it has commanded wide admiration. Has been in perfect bloom since last of August. Grows 5 feet high, has strong stems and has never had a trace of an insect on it. Of very easy culture. L. C. L. JORDAN.
Bergen Point, N. J., September 26, '96.

BULBS AND BULB PLANTING.

The bulb planting season is now upon us, and we are busy with it. We grow a large collection of these spring beauties, for they are one of the most interesting classes of plants to cultivate. To grow them in perfection a well drained sandy soil that has been enriched with old barnyard manure is the best, but any common garden soil will do providing it is well drained. The most of our bulb beds are raised four to six inches above the level of the walk; in this way the bulbs ripen off nicely in spring without any lifting; we let all our bulbs remain in the ground over summer, and with this treatment they do splendidly. Narcissus bulbs planted four to five years and left undisturbed have increased wonderfully. A number of varieties planted at that time, six bulbs of each in a clump, gave last spring 75 to 94 flowers to the clump. We grow all our bulbs in clumps, the smaller bulbs, such as scillas, grape hyacinths and the like, we grow in masses. Each clump or mass is labelled, and when it flowers we make notes of the best varieties and also of the ones that do best with us. All amateurs should grow a few bulbs; they are easy to manage and sure to flower. If the winter has not been too hard how nice it is to go out in the garden to some sheltered nook and pick a few snowdrops while the snow is yet on the ground. We did this last winter from the 14th of February till late in spring, and they were more welcome than the choicest blossoms we had in the greenhouse. When I say grow a few bulbs I do not mean a few hyacinths or tulips; these are seen everywhere, but some of the other



THE GOLDEN CHINESE ARBOR VITE AT DOSORIS.

ones, such as snowdrops, winter aconite, glory of the snow, grape hyacinths and scillas. Narcissus looks well in clumps, say six or a dozen bulbs to a clump.

In planting bulbs of the larger size, such as hyacinths, narcissus, tulips, lilies, iris, crown imperials, it is best to dig out the beds or border, or wherever they are to be put, say five or six inches deep. The bottom of the holes or trenches should be dug and a light coating of manure given in the bottom, the bulbs planted and the soil filled in again. In this way the bulbs are all at one depth, and they come up all at once and flower at the same time.

But by planting with a trowel you always get the bulbs more or less unevenly planted, which means some days' difference in the time of flowering.

To have an unbroken supply of spring flowers a selection has to be made from the snowdrops in March to the late tulips and narcissus in May and June. If the garden is not very large snowdrops and crocuses can be planted in the grass. Some plant them by making holes with a sharp pointed stick and dropping the bulbs into these, but the best way is to lift a sod and plant your bulbs under it, putting it back again and tamping it

down; in this way the bulbs are more evenly planted and come into flower more evenly. The bulbs may be left in the grass from year to year. But don't forget to plant a clump of snowdrops in some sheltered nook to give you early flowers.

The early flowering scillas are very showy if grown in a mass and close together; they make a nice edging to taller growing bulbs. The same can be said of the chionodoxa. The Muscari hyacinths are other fine spring flowers and lovely when grown in front of a border or bed; grow the blue and white vari-

eties together. The May flowering scillas (or wood hyacinth) are also showy and easily grown bulbs, thriving most anywhere, and they are fine for naturalizing among shrubs or under trees. The spring snowflakes should be largely grown for cut flowers, their pure white blossoms being excellent for this purpose. The ixijs, sparaxis, babianas and tritonias are not hardy here, but they can easily be planted in a frame, setting them late in the fall. You can put them in your pansy frame and deep enough so that when you lift out your pansies in spring you won't disturb the bulbs. They succeed very well in this way and are worth the trouble; the calochortus do nicely in the same way.

How beautiful some of the newer tulips are, such as Batalini, Clusiana, Eichleri, Vitellina alba, linitolia; the last named one only grows about three inches high. This fall we will add a few thousand more narcissus to our garden, but as there is such a number of varieties of them that it is hard to make a selection, but one cannot go far wrong, as they are all good. Among the showiest ones are: Sir Watkin, Ledsi, Hoisfieldi, Maximus, Emperor, Nelsoni Major, and don't forget to plant a lot of the poet's daffodil (*Poeticus ornatus*); it is the finest of all for cut flowers and lasts a long time in bloom, in fact last spring it was our earliest narcissus in flower, coming into bloom in March in a sheltered border, and in the more open border it was the last one in flower. [Wasn't the plain *Poeticus* the last one? *Ornatus* is the early form of *Poeticus*.—Ed.] In planting bulbs in this way in different parts of the garden a succession of flower can be had for a long time.

Mahwah, N. J.

DAVID FRASER.

CLEMATISES IN THE GARDEN.

Clematis lanuginosa, the subject of this illustration, belongs to the large flowering summer and autumn bloomers, and produces its flowers on the current season's growth. It does not bloom in masses after the manner of the *Jackmanni* type, but disperses its favors in such a way that their individual beauty is more fully developed by the setting of green foliage immediately back of the flower. The illustration does not do justice to this feature, as blooms that in the picture seem to run one into the other, are in reality divided by several inches, one back of the other. The photograph was taken about the middle of July, when this plant was probably in its prime; it has been in bloom more or less ever since and to-day, Oct. 10, possesses one solitary flower, the last of the Mohicans. The flowers are about three to three and a half inches in diameter when first opened out flat, and increase in size until they reach five and six inches. Their color at maturity is a delicate lavender. Each bloom remains perfect for a week or more. The space included in the view is that between two posts permanently occupied by the *Akebia quinata*. The clematis in flower is planted nearly in the center. To the right of it is a plant of clematis *Duchess of Edinburgh*, which is a light grower with me, producing only a few of its handsome double white flowers. It belongs to the Florida type that blooms mainly from the old wood, which I do not save to any great extent, but in August shoots from the old wood have reached up quite a way into the edge of the *Akebia* and placed there a few pure white rosettes which are charming to behold. To the left is a strong vine of *Jackmanni superba*, a very dark violet purple which



CLEMATIS LANUGINOSA.

does not open up full until about August 1. It is mainly trained on a few strings run up alongside the *Akebia*. It crowds over somewhat on to the *Akebia* and twines in and out its outer face. As I cut it back from the *Akebia* when through its most profuse flowering, it does the vine no harm. I know of no vine that will allow others to grow over its face part of the season and stand it so good naturedly as the *Akebia*.

One of the most pleasing sections of my veranda, where the posts are fifteen feet apart instead of twelve, as is the case here illustrated is planted as follows: To the right, planted three feet from the *Akebia* is the *Kermesina*, which is carried up along the edge of the *Akebia* nearly to the top, producing a mass of claret-colored flowers in July and August. Planted next to the left is a strong plant of the Texas leather flower (*Clematis Viorna* var. *coccinea*). This mainly covers the space between the posts, but stray shoots find their way up in company with the *Kermesina*. This vine commences blooming in July, but is most profuse in August and never knows when to stop. Jack Frost always catches it in bloom. Nicholson describes the flower as follows: "Sepals four, very thick and fleshy, about one and a half inches long, campanulate at the base; segments reflexed at the tips, interior yellow, exterior of a intense vermilion." Then to the left comes an old plant of that magnificent species *C. paniculata*. Between this and the other *Akebia* vine is the European Traveler's Joy (*C. vitalba*) that is in its prime in August. This vine, with its small star-shaped, almond-scented white flowers in clusters, is not a rampant grower, but sends out long slender shoots that twine in and out the outer face of the *Akebia*, appearing in unlooked-for places, and when in bloom seem like festooned bands of lace against the *Akebia* green. All summer long *C. paniculata* had been stretching out its long arms, one to the right, the other to the left, keeping close to the top of the railing until it takes its place alongside the *Kermesina* on one side and *Vitalba* on the other, but being more vigorous and more inspiring than its companions it continues on reaching the top of the post and then across, under the arch of *Akebia* vines (on strings provided), until its dividing arms meet in the center, having

formed a complete loop in its travels. All the season through we had almost forgotten it, not at the root however, where it had plenty of moisture, but the charms of its companions satisfied our present desires and we gave but little thought to it. About the last of August from numerous side shoots thousands of tiny pointed buds appear, which on some fine morning in September cover the vine as if a snow storm had strayed in before its time. White starry flowers in countless thousands, delicately perfumed like my lady's kerchief, all arranged in graceful sprays. This is a vine that every one wants and should have. It is perfectly hardy under ordinary culture, but for full effect it must have good rich soil deeply dug and profusely watered. I have two vines planted at each side of a portecochere. In addition to the ordinary watering from the hose, one receives considerable during the season, by a pipe from the roof. This plant, although of the same age as the other, produces one-third more blooms. When winter approaches this surplus water is carried to the roadway by a wooden gutter.

On other parts of the porch railing I grow other hybrids, such as *C. Madame Edouard Andre*, "the red clematis," which made its debut at the World's Fair. It belongs to the *Jackmanni* type and while not as vigorous as that variety is a fairly strong grower and a good bloomer. *Rubro-violacea*, a maroon purple, is very rich looking and a fair bloomer. *Wm. Kennett*, a deep lavender, is not a strong grower and does not produce over a dozen flowers during the season. *Velutina purpurea*, a blackish mulberry, is also a shy bloomer. *Viticella venosa*, while a strong grower and good bloomer, is weak in color and only attractive at a distance. All so far mentioned have proven hardy under protection. They are planted in a deep rich, light soil and well watered in summer. All are cut to within a foot of the ground in the fall, and laid upon some leaves, parallel to the porch, covered with leaves, and then a board put on. A heavy coating of good manure is put all over the bed and worked into the soil in spring. The board is put thereon because the winter's snow is swept from the porch and then thaws and freezes into ice. *Clematis montana*, which to a certain extent might be likened to a spring bloom-



HARDY PERENNIALS IN FAIRMOUNT PARK, PHILADELPHIA

ing *C. paniculata* is a failure here, even when well protected. The root will live and produce growth fifteen or more feet in one season, but it blooms entirely on old wood which I can't save.

Clematis integrifolia var. *Durandi*, a hybrid non-climbing variety, grows to three and a half feet high, and blooms all summer if the faded flowers are cut off. Mine commenced blooming in June and still has flowers. The type is a small herbaceous perennial with deep blue nodding flowers, while this variety has open flat flowers often larger than Jackmanni. It is a very satisfactory plant to grow, evidently being free from disease. *C. Virginiana* rambles at will in some of the wilder parts of the garden and almost becomes a weed. *Coccinea* is the most satisfactory for winter decoration as its leaves dry green and its seed balls are attractive.

Highland Park, Ill.

W. C. EGAN.

HARDY PERENNIALS IN FAIRMOUNT PARK, PHILADELPHIA.

One of the most attractive spots in Fairmount Park, Philadelphia, is the old fashioned hardy flower border shown above. [Then what on earth is that geranium bed doing in front of it? If the hardy plant border is so attractive—and we know that it is—don't the geraniums between it and the walk help to ridicule it? Aw y with them, put them where they belong, that is no place for them there. If there isn't enough between your hardy plants and the walk widen the border, not in mass but in effect by a scattering of clumps of yucca, white day lily, tritomas, pæonies, or the like, but don't kill its effect by "bedding plants" intruders. Geraniums are lovely and highly proper in their right place, but judging by the picture it is not there.—Ed.] Here from early spring until late in the fall, flowers are always found in abundance. Aquilegias, dielytras, digi-

talis, funkias, hollyhocks, irises, pæonies, sedums, spiræas and a number of other pretty subjects succeed each other and vie with one another in making the gardens bright.

A little formal display in connection with the hardy border is not always out of place; indeed it has the charm of pleasing many, as does the long bed of bright colored geraniums edged with tricolored leaved sorts. It always looks well, rain or shine. [If your border of hardy plants needs the support of the geraniums then there is something the matter with the make-up of the border.—Ed.]

Our parks however, are slow in taking hold of even good new plants such as spiræa Anthony Waterer, *Caryopteris Mastacanthus*, *Rudbeckia Golden Glow*, *Vitis Coignetiae* and a number of others which certainly ought to take the place of the wretched beds of petunias, marigolds and euphorbias we so often find in them. Not only do the managers refuse to buy them but they are even unwilling to accept them when offered free of charge.

A. B.

FINE FOLIAGE PLANTS IN THE FLOWER GARDEN.

Quite a number of foliage plants are in cultivation suitable for summer use out of which are not commonly met with simply because they are not so easily gotten up in large quantities as are coleus, alternantheras, and the like. *Pandanus Veitchii* is a good example, it fairly revels in our hot sun, sending out its thick succulent roots in all directions and putting on a color in the leaves which cannot be equaled in the greenhouse. *Phyllanthus* takes on a growth, the leaves of which are more beautiful than many flowers, *P. roseus pictus* is one of the showiest, the young leaves are of a delicate shell pink, *P. atropurpureus* has darker foliage, *P. nivosus* has the young leaves beautifully

mottled with snow white. These plants are shrubs, and when full grown about from three to five feet high; they are natives of the South Sea Islands. When the plants have completed their growth take well ripened wood for cuttings.

The croton is fast becoming a popular outdoor plant. It is unsurpassed for rich and varied foliage markings, there are hundreds of varieties and most of them are desirable. The plants can be treated much in the same way as geraniums, only they need a little more heat. We root our cuttings for the following season, before the hot weather is over and without artificial heat, merely by covering the cuttings over with some panes of glass. Let the cuttings be well rooted before potting off. The fancy leaved caladiums are also getting better known for outdoor use, some of the older kinds, that is those which are not too highly colored, are best for this purpose. *Wightii*, *Uranus*, Dr. Lindley, *Triomphe de l'Exposition*, *Rossini* and *Canaertii* are all good, the highly colored kinds do not stand the sun well. They need lots of water. A good place for them is by the margins of lily ponds. Keep over winter by storing the tubers in dry sawdust in a warm place, they won't stand cold. *Abutilon Souv. de Bonn* is one of the best of the recently introduced foliage plants, it keeps its variegation well and grows into a neat symmetrical bush. *Sanchezia nobilis* has a different appearance altogether when planted out, from what we are accustomed to see in the greenhouse; it has large variegated leaves, slightly resembling some of the variegated aucubas.

Rex begonias do nicely in the shade, thriving well by the north side of a house where the soil can be kept damp, but out of doors they lose their distinctive colorings to a certain extent.

Euphorbia hamatodes has dark brown leaves with a metallic sheen the veins are rose colored; does grandly outside. A

good companion to the variegated abutilon.

Talinum crassifolium variegatum is one of our best variegated leaved plants and grows a foot or so high before flowering, the flowers are small, pink, arranged in long loose spikes. The seed capsules when ripening add considerably to the beauty of the plant; they are of a reddish yellow color. An easily managed plant.

Strobilanthes Dyerianus is doing well this season; it must not be allowed to get too dry at the roots, as it is very liable to the attacks of the mealy bug when the plants are the least unhealthy, and once these pests gain a footing they are difficult to eradicate.

The new *Acalypha Hamiltoniana* did not show up well last year, and this is probably the last season we will grow it, as it has a very weedy appearance.

G. W. O.

U. S. Botanic Garden, Washington, D. C.

NOTES FROM SPRINGFIELD, MASS.

As you know, our Springfield Amateur Horticultural Society has frequent and always very interesting meetings. Men and women, young folks and old folks, all belong to it, and we all have gardening on the brain, and if you come this way again you'll find that we have gardening about our homes too. Well, our meetings are delightful gatherings; we have a little music and entertainment, and we talk about our flowers and our gardens, relating our experience, and seeking, getting and giving information. And when the meeting is formally dismissed we don't rush helter-skelter down the stairs in our hurry to get home, but linger in an eager and sociable way discussing our flowers, telling and hearing about each other's roses and daffodils and such like posies. You who have no amateur horticultural society in your town are to be pitied. Its work is one of love and interest. You attend the meetings, not to sit still and listen all the time, for you couldn't do that if you tried, nor to make a speech, for there are no speeches, but just to talk among yourselves about your pansies and sweet peas, your pears and strawberries, your celery and peas. You can't help yourself, if you are a crank on roses, when everybody is talking roses, you can't keep still, you've got to tell about your roses, and so on, till you'll be all a-talking, and as happy and friendly together as you would be at a church sociable.

CHINA ASTERS.—Among the subjects discussed at our meeting the other evening Mr. Simonds told us that the disease had overtaken his China asters; he had grown asters for many years with much success and never till this year had they been a failure. When they were growing nicely the blight struck them, and they withered and died; he did not know the cause of it or remedy for it. The asters in the gardens of some other members had also suffered from the disease. Mr. Aumer found that it is a fungus disease, and it first asserts itself in the stems of the plants. He pulled up and burned all his diseased plants to prevent its spread. But, curious, not one of the Semple asters (a race of asters gotten up by a Mr. Semple, a florist of your city, Pittsburg, Pa.) were diseased. Mr. Robinson grew 5,000 aster plants this summer, but they had no disease; he thought locality and soil had much to do with the health of the plants. He selected and saved his own seed, and also bought a good deal, and he finds that from his own saved seed he gets as good flowers as from any bought seed,

with further a chance of a greater range of color; in buying seeds he advised against buying them in mixed colors—always get the colors in separate packets.

DAHLIAS.—In these Mr. Robinson thought that A. D. Lavoni was the best pink one, and we all like the pigmy Belle of Springfield and Edaline.

PANSIES he grows in thousands. He sows them late and winters them in the seed bed and without any covering in the way of a mulch, and in spring transplants them to where required.

SWEET PEAS were a failure this year on account of late planting. Mr. Eldred, a specialist in this line, assured us that the great secret in growing sweet peas was in sowing them early. He made 275 crosses of sweet peas this summer, and from the seed saved from these crosses he hopes to obtain some new varieties next year.

CLEMATIS PANICULATA was spoken of highly.

CANNA SEED.—In the secretary of the society's garden young canna seedlings come up every year, although it is seven years since he allowed before now any canna to grow there.

MORNING GLORIES.—Mr. Simonds had morning glories come up in his garden every year since ten years, and during this time he has not sowed any seed, nor allowed any of the young plants to grow up and go to seed. CHAS. L. BURR.

Oct. 7, '96.

THE ROSE-PURPLE CONEFLOWER.

(*Rudbeckia purpurea*.)

The coneflowers are mostly yellow-flowered, and some are yellow with dark centres, but here we have one with showy rose-purple blossoms. Our illustration is engraved from a photograph of a couple of sprigs we cut of it for this purpose, and shows without any make-up or exaggeration the true nature and style of the flower and plant. We make mention of this because a year or two ago it figured as a garden novelty; but this doesn't detract in the least from its value, for although a little coarse in appearance it is a good and deserving hardy perennial. To add to its merits, it is easily raised from seed, perfectly hardy, easy to grow, and sure to bloom, and it is a good perennial. There are a few distinct varietal forms of it, also a reputedly distinct species (*R. angustifolia*), but they all are a good deal alike. It has a special advantage in being late blooming. It likes good ground.

Roses.

HARDY ROSES.

I was much pleased with Mr. R. H. Warder's notes on hardy roses for Cincinnati, and especially for his loyalty to old and tried varieties "which behaved well and stood by him in heat and cold." There has been for many years past a craze for new roses which has resulted in encumbering nursery catalogues with an endless list of varieties, whose only merit frequently consists in the euphonious names for which European rose growers have a remarkable fancy, but which often catch the eye of the public as well as their shekels without giving adequate value. Within the past fifty years during which period I have been a rose fancier, I have tested almost every variety which appeared and I trust that I may, therefore, be permitted to give a few notes from my long experience.

Of the varieties of hybrid perpetuals included in Mr. Warder's list there are several that were among the earliest favorites and are still considered so although scores of new sorts have appeared, each with glowing descriptions, but their life has been in many instances a most ephemeral one.

"Elles ont vécu ce que vivent les roses
Durant l'espace d'un matin."

This is not an inappropriate quotation to the rapid passing away of so many varieties.

Until 1845 there were known very few roses of the hybrid perpetual class, not more than a dozen varieties were then available and Mme. Laffay was doubtless the first of what is now the most valuable class of hardy garden perpetual blooming roses that can be successfully cultivated in the colder sections of this continent. Until the advent of Mme. Laffay the hybrid roses were only spring bloomers, and I remember that among a collection of upwards of one hundred varieties we had in our grounds in Belgium, there were flowers that were surpassingly beautiful, and are to-day not equalled by many of the so-called hybrid perpetuals that have no claim to the latter appellation as they are in reality only summer roses. And this is unfortunately now the case with the majority of the new varieties of hybrids sent over to us by European growers every year. Of the 130 new hybrid perpetual varieties which I received from Europe within the past five years I have retained less than twenty-five and even some of these will eventually be discarded. A few flowers in April or May and then nothing but either a tangled wood growth or death of the plant from weak constitution.

The advent of General Jacqueminot was soon followed by a number of its seedlings. Some of these produce better flowers than the parent, there is so little difference among the larger number of them however, that few of them have been retained, but it is extensively cultivated or forcing, few of its numerous offspring possessing an aptness for this latter quality.

To Mr. Warder's excellent list I would add the following which include the best of the newer sorts and whose merits have been fully tested, and all of them are free bloomers.

CARDINAL PATRIZZI—(1857), vivid crimson, shaded purple.

CLIO—(1894), very large and globular, finely formed light rose; center slightly dark; it is a free bloomer.

DOCTEUR HENON—(1855), by far the best of all white hybrid perpetuals. Its flowers are large, well formed, and of the purest white color, and is a very free bloomer.

The wood is thornless. This variety should always be budded on Manetti stocks.

ELIZA BOELLE—(1860). Of dwarf habit, flowers white, slightly tinged with pink, of medium size and beautifully formed, a constant and profuse blooming sort.

FRERE MARIE PIERRE—(1893). Flowers very large, cherry red, very full and of good shape, a constant bloomer, wood is thornless, habit very vigorous. It is one of the best of the comparatively new sorts.

JAMES BOUGAULT, or White La Reine. Similar to the old La Reine but with flowers of a light flesh color.

LOUIS VAN HOUTTE—(1869). This is one of the very best dark autumn roses, a free bloomer, and at the south is superior to Jean Liabaud. It is of intense dark crimson maroon color and during cool days changes to a blackish crimson.



THR ROSE-PURPLE CONE-FLOWER.

LADY ARTHUR HILL—(1890). A beautifully shaped flower, tender satiny rose; a free bloomer.

MADAME MOREAU—(1872). Few roses combine so many good qualities; it is of robust, vigorous and short jointed growth, every branchlet ending in a flower bud. Flowers are very large, finely imbricated and dark red shaded violet. The plants are as free bloomers as any tea rose.

MARGARET DICKSON.—Flowers medium, white tinged flesh, good form but borne upon the end of very long canes. This variety should be lightly pruned during summer, otherwise few flowers appear; exceedingly vigorous.

MRS. R. G. SHARMAN CRAWFORD—(1894). Very large, of fine form, and in color of a peculiar dark rose tint with the outer petals of lighter shade.

SPENCER—(1894). Of the Baronne de Rothschild type of growth, stout and erect; flower is very large, of excellent form and of a satiny rose color, its outer petals have a white sheen.

SOUVENIR DE MME. EUGENE VERDIER—(1894). This promises to be one of the best roses of the last productions; extra large, fine form, bright rose color, with

outer petals of a silvery tint. It is a free bloomer.

To these could be added another score or two of excellent varieties which would be desirable for large collections. When one has several hundred varieties of hybrid roses in bloom to select from, it is difficult to confine the best to a few sorts, but we want here varieties that will afford blooms daily from April until frost, and ignore others whose blooming period extends only during a week or two, although in point of colors and form many of them are exceedingly handsome.

P. J. BERCKMANS.

Fruitland, near Augusta, Ga., October 9, 1896.

HARDY ROSES—MY FAVORITES.

My experience in growing hardy roses in the open ground led me a long time ago to discard budded plants and grow only varieties on their own roots, and I prefer growing the plants five feet or more high with hundreds of flowers on them rather than to cut them down clear to the ground in order to get a few choice exhibition flowers. The finest sight on my grounds this season was a bush of the Province rose with hundreds of

flowers on it, and they are so fine to cut from, they have the true rose scent and perfect foliage with long stems. The Province and Madame Plantier roses always grow and do well everywhere, and they will be alive and at the funeral of all the other hybrid varieties planted at the same time. Here is a list of 12 of the kinds that do best with me:

Province or Cabbage rose, rose color.

Madame Plantier, white.

Gen. Jacqueminot, vivid crimson.

Mrs. John Laing, pink.

Magna Charta, pink-carmine.

Mme. Georges Bruant, white.

Paul Neyron, deep rose.

Baron Bonstetten, velvety maroon.

Mme. Gabriel Luizet, pink.

Gen. Washington, red shaded crimson.

Ulrich Brunner, cherry red.

Caroline de Sansal, flesh color.

Mr. C. W. Ranlett, a retired rose grower of Holyoke, Mass., who gives his whole attention to hardy roses would recommend for twelve varieties:

John Hopper, bright rose; Marquise de Castellane, carmine rose; Prince Camille de Rohan, velvety crimson; Anne de Diesbach, carmine; Mme. Gabriel Luizet; Fisher Holmes, bright crimson; Jules Margottin, carmine rose; Gen. Jacqueminot; Gen. Washington; Caroline de Sansal, and Alsace-Lorraine, deep velvety red; Alfred Colomb, carmine-crimson. In ten best sorts W. C. Barry, of Rochester, N. Y., would add three not before mentioned, namely, Marshall P. Wilder, cherry rose; Merveille de Lyon, white, and Louis Van Houtte, crimson maroon. Mr. W. H. Spooner, of Boston, in his twelve best gives us Charles Lefebvre, reddish crimson; Hippolyte Jamain, carmine red; Marie Baumann, crimson vermilion; Annie Wood, bright crimson, and Victor Verdier, bright rose. The late Peter Henderson would add Mabel Morrison; flesh white; Queen of Queens, pink with blush edges, and Pride of Waltham, flesh color. Alvin Jordan, who loved roses for their perfume, would add three more, namely, Francois Michelin, deep rose; Maurice Bernardin, bright crimson, and Coquette des Alpes, white. Elbert S. Carman in a list of twenty would give Rev. J. B. M. Camm, crimson rose; Francois Michelin; Baron Prevost, pure rose; Abel Grand, glossy rose; Boieldieu, cherry red; Mlle. Marie Rady, vermilion; Queen of Waltham, cherry red; Pierre Notting, deep crimson, eight different kinds. John N. May in a list of twenty-five hybrid perpetuals and hybrid teas mentions Boule de Neige, Coquette des Blanches, La France, Mme. Eugenie Verdier, Countess of Oxford, Francois Levet, Duke of Teck, Dinsmore, Abel Carriere, Duke of Edinburgh, La Rosiere, Jean Liabaud and Monsieur Boncenne. Here we have a list of the best roses from different growers in different sections of this country. When I find a rose that will not grow on its own roots I discard it for some other variety. Capt. Christy is one of them, although Mr. Spooner informs me that I will succeed better with the climbing variety of that name, but I think if one will take the Province, Madame Plantier, Jacqueminot, Mrs. John Laing, Magna Charta, Mme. Gabriel Luizet and Baron Bonstetten and grow them in large quantities they will derive more pleasure than in growing a large number of varieties.

Springfield, Mass. CHARLES L. BURR.

IF YOU appreciate GARDENING please recommend it to those friends to whom you know the paper would be useful. You can assist us materially in this way.

GARDENING

WILLIAM FALCONER, Editor.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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TORCH LILY, or flame flower, or fiery poker (*Tritoma* or *Kniphofia*) is now grand in the park nursery where we have a large bed of it containing hundreds of torches all afire. There is nothing else indoors or outside in the way of flowers to compare with this mass of floral fire, and continuing now after frost has come and destroyed the other pretentious flowers makes it doubly valuable. These tritomas, either from seed or plants, are within the reach of everyone, and they are easily grown, then why should any of you be without them? They are not particularly hardy, however, but under a heavy mulching they live over winter all right; or they may be lifted and heeled in in a cold frame or pit over winter, or stored in a cold cellar, but they mustn't be kept dry at the root.

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THE WILD GARDEN.—We have to thank our esteemed friend Mr. William Robinson of London, for a magnificently gotten up copy of his excellent work **THE WILD GARDEN**, and we feel particularly gratified to find that the editor of GARDENING was one of the chosen few who have been presented with these handsome copies. The book teaches, and that too vigorously, pointedly and convincingly by pen and pencil how, how to make wild places beautiful.

CROTALARIA RETUSA—Mr. A. Blanc of Philadelphia sends us a bunch of cut flowers of this pretty pea bloom. The sprays are fourteen inches long and each is terminated by a raceme; spikes seven to eight inches in length thickly clothed with large handsome yellow flowers. Really it is very beautiful. When we first opened the box the sprays struck us as having a likeness of *Thermopsis Caroliniana*, but they are prettier and more graceful. It can be raised from seed.

SCABIOSA CAUCASICA, the Caucasian scabios, is one of the gems of October. Sharp frost has come and destroyed our bedding plants, most of our other hardy plants have spoiled by drenching rains or frost, but this blue-flowered beauty shows no harm from any cause. It has been in bloom all summer and is fuller and prettier now than at any previous period; but it never makes a big show. It can be easily gotten up from seed, but as seeds are not over plentiful at anytime, it isn't a plant one is apt to get overstocked with. Try it anyway, and grow it on thoroughly drained but not very dry soil.

A **BUSHEL BASKET** is an illegal measure in England. A London market gardener sold a bushel of peas to a customer, using a bushel basket as the measure. This was common custom and the customer was perfectly well satisfied. But an inspector of weights and measures happened to see the transaction and prosecuted the gardener for having in his possession, for use in trade, an unstamped bushel measure, and the gardener was fined \$5 and costs. Were a basket of peas bought the Act would not apply, for a basket is not a fixed measure any more than a cup of tea is a fixed quantity; but when a bushel of peas is bought, it must be served in a properly stamped and denominated measure. The law is "All measures of capacity must be stamped and denominated, and their measure plainly marked on the outside," and "no local or customary measures, nor those used as heap measures, shall be lawful." Were this the law here we wonder what would become of the man who sold us strawberries by the "quart" all last summer.

"**THE CHINESE CHESTNUT**" is the English name Mr. W. Go dring of London suggests for that beautiful little tree, *Xanthoceras sorbifolia*, in the Garden, because its flowers look like those of the horse chestnut, and botanically it is a near relative of the horse chestnut. No, no, don't use that name. Speaking of chestnuts generically we always mean sweet chestnuts, and surely neither in flower, fruit, appearance, now family has the xanthoceras any affinity or resemblance to the sweet chestnut. Besides we have European chestnuts, American chestnuts, and all are sweet chestnuts, and one of these days we may have a true and distinct species of sweet chestnut from China, then what would become of your proposed name for the xanthoceras? It would be abandoned. Splendid pictures from life of this tree, its fruit, and flowers

from Dosoris, were published in GARDENING, May 15, 1884; and another picture of an exceptionally fine plant of it in bloom in Philadelphia, appeared in GARDENING, June 15, 1895.

THE NUT CULTURIST is the name of a new and important work that comes to us from The Orange Judd Co., New York. It is a book 7½x5 inches, contains 290 pages, and over a hundred illustrations, and costs \$1.50. The author is our lamented friend the late Andrew S. Fuller, of Ridgewood, N. J. Mr. Fuller was a professional arboriculturist of great experience, and had a beautiful country home at Ridgewood where he gathered together for love and experiment a vast collection of trees and shrubs ornamental and useful. Nut-bearing trees and nut culture were a hobby of his, and this his last literary work—he was the author of several other books on fruits, trees, etc.—he used to regard as his crowning effort, it was his pet subject, he was master of it by intimate practical experience, and he had the field all to himself. How hopefully he used to write to us of its progress every now and again; he lived to finish it but not to see it published. The book deals in detail with every kind of nut tree hardy in this country, for instance almond, walnut, hickory, chestnut, hazel, etc., and tells us how to propagate them, grow them, and gather the nuts and make money out of them. And it describes every other kind of nut known anywhere. In fine it is a reliable text book on the subject, and we heartily recommend it to our readers.

VARIEGATED PLANTS IN LANDSCAPE GARDENING.—In company with a gentleman of keen perception and horticultural taste we were examining the plants in the park nursery the other day and came upon a fine block of *Prunus Pissardi* in deepest crimson hue, and a patch of *Spath's cornus* in its golden dress. "Yes, they are very beautiful in their way and striking," we answered, "but we cannot plant them in the park except in the neighborhood of buildings and artificial gardens. We cannot use them out in the park proper." "Why?" he asked in astonishment. "Because of their unnatural coloring, and except in very deeply studied groupings their use would be incongruous in modern landscape art." "Fiddlesticks!" he exclaimed. "Bless you, man, the most gorgeous colored plants in nature are our forest trees in their autumn glory, they are far more brilliant than your garden colored trees, and all mankind raves over their appropriateness and beauty; and if we accept the one, by what consistent law can we reject the other? No sir, never; we want those colored trees and we must have them." Oh that Fred Law Olmstead had been there, or Professor Sargent had been within earshot of our respected friend! But time will mellow his enthusiasm. In Schenley Park we hope to have every variegated leaved tree and shrub that is hardy here represented, using them in the garden part of the park, not so much for landscape as for educational effect, making a feature of them nowhere; but in the broad acres of wood, ravine, and setting to the lawns and vistas, purer nature must prevail, and we shall strive after her greatest glory in flower and fruit and vivid autumn foliage.

THE ENGLISH FLOWER GARDEN—We have repeatedly called your attention to this book and told you that it is the best work on ornamental gardening extant. That's what we used to say of each and

every one of its four editions as it appeared, and now comes a fifth edition that completely eclipses its predecessors. The book is 9 by 6 inches and contains 900 pages, and it is illustrated more lavishly, pointedly and beautifully than any other horticultural book. Its author is Mr. William Robinson of London, the editor of *The Garden and Gardening Illustrated*, and the author of several other books as *HARDY FLOWERS*, *THE WILD GARDEN* and *ALPINE FLOWERS*. Mr. Robinson is a keen, vigorous writer, and a trained, practical, professional gardener; he loves flowers, knows them, grows them, and uses them in a natural and artistically beautiful way. As a landscape gardener he ranks preeminent; in fine the name of William Robinson stands for everything that is nobly and artistically beautiful in gardening, and that is unalterably opposed to humbug and formality. A text book from such an author is a treasure indeed. And this new edition is a completely revised, newly arranged and freshly written work, and it contains a vast amount of new and important information. One of the specially valuable additions is the introduction of shrubby roses, etc., into the body of the work in alphabetical order with the other flowers. You know in very few of our horticultural books have we any full reliable information about ornamental shrubbery, then what a pleasure it is to turn to this magnificent work and in it find the truth in its fulness and purity by a man who knows what he is talking about. In conclusion we advise every reader of *GARDENING* to get this book; as the Bible is the rule and guide of your life so shall the English flower garden be of the outdoor decoration of your homes.

THE PYGMY VICTORIA REGIA.—I note in *GARDENING* that you have been attracted by the quaint appearance of the *Victoria* sent by me to Mr. Pettigrew. It is a very novel and interesting plant and entirely distinct from the other *Victoria*. That peculiar flower bud with the smooth sepals is an advantage as it affords us one means of taking hold of some part that is not spiny, the seed, too, is round but one of its main features is its freedom of flowering and at a very early stage or when at a size I've never known an ordinary *Victoria* blossom, another is that the leaves turn up at a very early stage when not more than 10 or 12 inches diameter. Two weeks ago I had a plant in a 10-inch seed pan produce a perfect flower, and the same plant has other buds which will doubtless develop later. I may also say that the same plant (or variety) will produce average size leaves, say 5 to 6 feet in diameter, and I have had as many as twenty leaves on one plant at one time. WM. TRICKER.

Riverton, N. J., Oct. 13, '96.

Chrysanthemums.

CHRYSANTHEMUMS.

Now that nearly all the disbudding is done, you should not think that your labor is over, for you must now be continually on the watch, as we get so much dull weather; if the plants get too wet they will get that much dreaded disease called "the rust." After this date it is always best to keep the plants a little on the dry side, although they should never be allowed to get dry enough to flag or droop.

See that no stagnant water is allowed to remain on the walks, and if these are

in a wet condition, sprinkle a covering of ashes or gravel on them, it will keep them nice and pleasant looking and you can admire the different varieties as they come into bloom with comfort; besides the dryness preventing mildew, which is often caused by stagnant water about the house. Since the latest introductions of early and very late varieties the chrysanthemum season has been much more extended than it was in former years. At the date of writing I have already sent to the New York market blossoms of Madam, Bergmann, white; Marquis de Montmort, pink; Marie Masse, Glory of Pacific, J. E. Lager, Marion Henderson, yellow; and Merry Monarch, white. By this you can see there is quite a collection of early varieties to keep one interested.

I expect lots of you will be looking forward to the exhibitions to be held next month, and will be sometimes troubled to know the best way to keep any forward blooms back till show time. Those grown in pots should be moved to a cool dry position in the house and moisture withheld from the foliage as much as possible. In the case of cut blooms, you can keep many of them that are at their best by putting them in a cool cellar, giving them fresh water every 24 hours, and cutting a short piece of the stem off of it every second day. Under this treatment blooms will improve in size and color. If you should have any of the late varieties, such as W. H. Lincoln, yellow; H. W. Rieman, golden yellow; Esther Cleveland, rose pink; Maud Dean, rose pink; Mrs. Jerome Jones, white; and Flora Hill, white, keep them in the coolest end of the house and you will be able to have 'mums on your table at Christmas.

The following are the best midseason varieties:

YELLOW.—H. L. Sunderbruch, Georgienne Bramhall, Golden Wedding, Miss Georgiana Pitcher, Eugene Dailedouze, Radiance, Minerva, Yellow Queen, Major Bonnaillon, and H. E. Widener.

WHITE.—Mayflower, Mutual Friend, The Queen. Mrs. H. McK. Twombly, Niveus, W. G. Newitt, Mrs. H. Robinson, Ivory, Mrs. J. H. Starin, Minnie Wana-maker.

PINK.—Helen Bloodgood, Mrs. Howard Rinek, Mrs. Geo. A. Magee, Pres. W. R. Smith, Vivian-Morel, Mrs. James Eadie, Eda Prass, Dorothy Toler, Lady Playfair.

HAIKY.—Mrs. W. J. Godfrey, Mrs. A. Hardy, R. M. Grey, Katharine Gordon.

ODD VARIETIES.—Pitcher & Manda, white, yellow center; Andes, terra cotta shaded with gold.

CRIMSON.—G. W. Childs, John Shrimpton. A. D. ROSE.

Jersey City, N. J., October 10, '96.

NEWER CHRYSANTHEMUMS.

As I write, it is "just before the ball"; we walk through the greenhouses every day and note with pleasure the thick heavy stems rising from the benches, and the closely set foliage crowned by huge buds which promise much for blooming time.

Our earliest variety this year is Lady Fitzwigram, we cut the first blooms of it on Sept. 17; it will last till Mme. Bergmann is ready. Lady Fitzwigram we consider one of the most valuable of the newer varieties, its color is pure white, and its blossom is a little larger than Bergmann and of most beautiful semi-globular, incurved form when finished, indeed it is very beautiful before it is fully developed. Grown in bush form it is as full and free as a pompon variety.

MRS. M. R. PARKER ('95) is a very

beautiful early pink, but it has been dropped by commercial growers on account of its flowers falling to pieces so quickly, this is a pity because it seemed perfect in all other points, such as earliness, color, dwarf habit, fine form, and size, but dropping the petals is a fatal fault.

EDITH SMITH ('95) is a most beautiful introduction, being like an enormous pearl white Vivian-Morel; the glimpse we had of it last year leads us to expect great things from it this year, and its fine growth at the present time warrants the expectation.

EVA KNOWLES ('95) is a gorgeous English cousin in red and bronze of enormous size and perfect form; it will probably be seen at many of the shows this fall.

MRS. S. T. MURDOCK ('95) promises to take rank very close to Mr. Dorner's other grand variety, Major Bonnaillon; it is a beautiful shade of pink; it is a fine dwarf grower with elegant foliage and looks as if built for business.

PHILADELPHIA ('95) when well done is one of the most beautiful of all the primrose white sorts, but evidently requires careful culture, and is generally conceded as being primarily an exhibition variety.

MRS. HENRY ROBINSON ('95) is the most perfect early white chrysanthemum extant; its season is Oct. 15 to Nov. 5, and it is easy to manage, being a free grower with good foliage and a strong stem. The flower when finished is globular and incurved, and formed of broad grooved petals; it compels the admiration of every beholder, yet strange to say, our English friends have given it up and pronounced it a failure.

MISS M. M. JOHNSON ('95) is an extra early large yellow, a dwarf grower, with large incurving golden blooms; it follows that other fine yellow, Marion Henderson, by a few days.

H. W. RIEMAN ('95) is a very large golden globe, massive and compact, with dwarf stems stiff and beautifully clothed; can be had very late in November and for this purpose is the most promising yellow to date, being of freer growth and more easily managed than Dr. Covert or Challenge.

MARQUIS DE MONTMORT is the earliest of the large flowering pink varieties and is being largely tried this autumn; our first blooms were finished Oct. 5, and here in Indiana our chrysanthemum season this year is a week late; the color is not specially pleasing being more violet than pink. It is a tall grower.

Last season our national chrysanthemum society awarded certificates to thirty-two varieties, I believe, and nearly all of these were distributed last March; this autumn they are on trial again before a still more exacting tribunal, the commercial growers and the exhibitors at the shows; this is a tribunal which does not express its criticisms in smooth phrases nor in doubtful language. In the meantime the plants are looking fine and if thick stems and good growth count for anything, we shall see most of the novelties of the year in fine condition.

S. A. HILL.

Richmond, Ind., Oct. 9, 1896.

CHRYSANTHEMUMS FOR AMATEURS.

At this season every lover of flowers is particularly interested in the Queen of Autumn. Her easy culture, large handsome flowers, and diversity of color at once commends her to every one, and how can we get such beautiful flowers or nice plants is a question that interests us all.

In the first place make due calculation as to the space which can be devoted to this flower, next decide what pot plants are desired for decorative purposes, and how many fine exhibition blooms are wanted. For the first, choose nice, healthy young plants about the first of April of such varieties as are given below. If they are at that time growing in a 2-inch pot, they should be shifted into a 3½ or 4 inch pot, using a few broken pot sherds at the bottom to insure perfect drainage. No plants suffer more from being over-watered than does the chrysanthemum. When the plants have been shifted, place them in the most airy part of the greenhouse, and water only when they need it; should green fly or other insects appear, lose no time in killing the same. As soon as the plants have made new roots sufficiently to be seen on the outside of the ball of earth, the tops of the shoots should be pinched out of them, leaving four or five sound leaves on the plant. In about fourteen or sixteen days each of the eyes at the base of these leaves will break into growth; each shoot should be encouraged to grow freely, and as soon as the pots are well filled with roots, the plants should be repotted into 6-inch pots, giving a little more drainage in each pot than for the last shift. Keep plants spread out, as they require more room, otherwise they will lose their bottom leaves and become unsightly. Encourage six or eight of the side shoots to grow freely, and should any of them indicate stronger growth than the others, pinch the top out so as to keep them shapely in form, and as soon as the pots are again fairly well filled with roots, shift them into 8 or 9-inch pots. When fairly well started to make roots into the new soil they can all be placed in the open ground; in doing this it is advisable to choose a position somewhat sheltered from strong winds. If the plants can be plunged in the soil nearly to their rims they will be much easier cared for during the summer; after this the principal attention necessary is careful watering, and as the shoots advance in length, a few small stakes should be put into the pots, and the shoots lightly tied to them to prevent their being broken by storms. In doing this they should be tied with a view of making a symmetrical plant. As soon as the flower buds are about the size of peas they should be thinned out, leaving only from three to six buds on each shoot. When this is done, and the buds begin to swell freely, the plants should be given a watering about once a week with weak liquid manure. One week it can be made by putting about a peck of droppings from a stable in a barrel of 50 gallons of water, allowing it to stand 36 or 40 hours before using; alternate this the next week by using 6 or 8 ounces of sulphate of ammonia in 50 gallons of water. By the end of September the plants should be placed in a greenhouse or where they can be well protected from frost, but they should never be placed where they cannot get an abundance of air. By this method nice bushy stock with nice quality of flowers can be had.

The method for producing the extra fine flowers that are seen at exhibitions is somewhat different. If it is desired to grow them in pots, the easiest way is to start with a healthy young plant from a 2-inch pot about the middle of June; pot it on in the same way as described above, but allow only one shoot to grow from each plant; repot as necessary till the plants get into a 6 inch pot; stake the plants as required, and when the buds are ready to thin out, pick out all but the

best looking one; feed as advised for the bush plants, and you can get magnificent flowers.

The other method to follow is to plant on benches under glass about July first, and grow two flowers to each plant; only in planting in the greenhouse for this purpose they should be planted about eleven to twelve inches apart each way, and trained to stakes or strings as needed; but the plants must have an abundance of air day and night all through the growing season. The best soil for growing chrysanthemums is a good loam of rather heavy nature with a liberal amount of well decomposed manure added and about fifteen pounds of pure ground bone to each cart load of soil. The whole should be thoroughly well mixed before using. This will give you a compost that will grow chrysanthemums as fine as you wish.

The varieties most suitable for bench plants are:

WHITE.	YELLOW.
Mme. F. Bergmann.	Yellow Queen.
Mrs. H. Robinson.	Fascination.
Ivory.	H. L. Sunderbruch.
Miss H. Wright.	Minerva.
Mayflower.	Challenge.
Niveus.	W. H. Lincoln.
Mrs. J. Jones.	Liberty.
PINK.	RED.
Nemesis.	Sunrise.
Achilles.	Geo. W. Childs.
Katherine Leech.	Creole.
Dean Hole.	John Shrimpton.
Maud Dean.	
V. H. Hallock.	
Titian.	

And nearly all the smaller anemone and pompon varieties are very useful for this purpose. The above are named in the order of their season of flowering, which covers from October 10 to December 1.

For the single flowers either for pot or bench culture the list of extra fine varieties is very numerous, but among the best are, in addition to the list above, Infatuation, Mrs. J. Peabody, Mrs. Perrin, Modesto, Sibyl Kaye, F. L. Atkins, Helen Bloodgood, H. W. Rieman, Mrs. S. T. Murdock, Olympus, Philadelphia, Eugene Daildeouze, H. F. Spaulding, Iora, Mrs. F. Gordon Dexter, Mrs. A. J. Drexel, and Robert McInnis.

JOHN N. MAY.
Summit, New Jersey, October 13, '96.

Vegetables.

STORING VEGETABLES FOR WINTER.

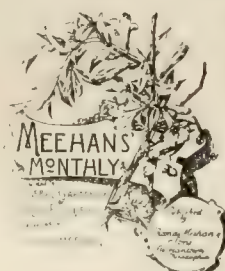
One of the first requisites for the successful wintering of many vegetables is protection from hard frosts during the latter days of October. This is especially true of carrots and beets. These should be pulled during the month of October, taking only dry days for the work. Pits for their keeping should be narrow and deep, not over two feet wide and three feet deep, if pits are very wide the vegetables may be spoiled by heating. In pitting, cut off all surplus roots and tops and form the heap above the surface of the ground, so that when covered the water will readily escape.

All vegetables stored in pits should be thickly covered by straw for a first coat, then apply two or three inches of dirt, to be followed by six inches more when winter promises to set in. The usual method of burying cabbage is to place it in a shallow trench heads down; running the rows east and west is preferable, as during the winter it can be taken out easier, the south side of the row not being apt to be frozen hard, incline the roots to the south side of the row to facilitate getting the heads out. In storing celery for winter dig a trench a few inches deeper than the length of the celery and as narrow as can be dug with a spade, pack the celery close in the trench in an upright position and cover each root with earth to keep it from wilting, cover the tops with straw or leaves, over which place two boards nailed together in the form of an inverted trough, then cover with earth. Potatoes to be kept in first-class eating condition should be excluded from all light. The bins in which they are placed may be kept covered with blankets and the windows of the room darkened. Turnips and ruta bagas may be kept in the same manner as beets and carrots, salsify and parsnips may also be kept or packed in barrels of moist sand in the cellar. For spring use salsify and parsnip should be left in the ground where grown as kept in this way it is of superior flavor. Winter radishes should be kept in boxes of moist sand in the cellar.

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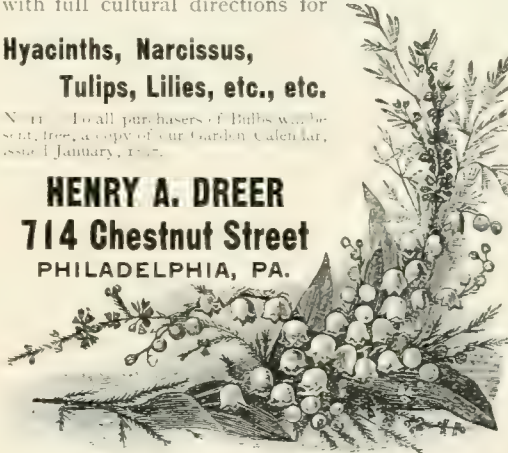
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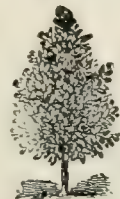
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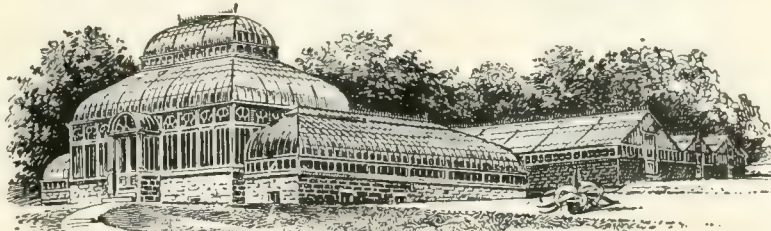
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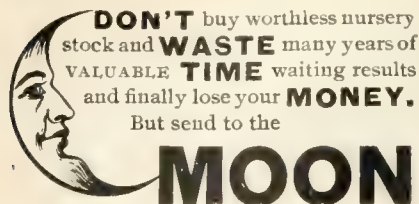
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THE CHINESE GOLDEN LARCH (*Pseudolarix Kämpferi*) AT DOSORIS.

Trees and Shrubs.

THE CHINESE GOLDEN LARCH. (*Pseudolarix Kämpferi*.)

This is a beautiful Chinese coniferous tree nearly allied to the larches, and it is hardy and happy in our gardens. Our illustration shows one of two fine plants of it at Dosoris, but unfortunately because of their surroundings we were unable to get a good and untrammelled photograph of either. The largest specimen we know of is on the old Parsons place at Flushing, Long Island; the Dosoris trees come next, then a handsome specimen in the beautiful grounds of Mr. H. H. Hunnewell near Boston. The trees are deciduous, low branching, wide

spreading and full, and the branchlets are dense fleecy wreaths of soft, green leaves, indeed the diameter of spread of branches is much greater than the height of the tree. It is called larch, because of the resemblance of the bunches of leaves to those of the larch, and golden because these leaves in the process of nearing decay in late summer assume a yellowish look, but they are far more beautiful in their full freshness of green. They bear cones and ripen seed freely at Glen Cove, and the seed is good and germinates readily.

While it is not a tree we would recommend in a small collection of ornamental trees, it is one that every medium sized and pretentious garden should have because of its distinctive beauty. Always grow it isolated a little from other trees, so as to show it off to better advantage.

AUTUMN-TINTED FOLIAGE.

The coloring of the foliage of trees and shrubs has not been as fine this year as in some former seasons, so much rain, no doubt, had something to do with this. Japan maples, however, are better than ever, especially the polymorphum and palmatum kinds. But, you ought to see our snowy sea elder (*Baccharis halimifolia*), its snowy, fluffy tailed seeds are very striking.

ORNAMENTAL BERRY-BEARING SHRUBS are still very beautiful. The arms of the Chinese matrimony vine are loaded with its coral fruit; the American calycarpa is full of glossy purple berries, the high-bush cranberry (*Viburnum Opulus*) is loaded with polished fruit, and the vivid scarlet berries of the Winterberry bushes (*Prinos verticillata* and *P. lavigata*) are strikingly beautiful. Several barberries, such as

the Chinese and Thunberg's are drooping in coral, the chokeberry is laden, and several species of thorn (*cratægus*) are full of red and showy fruit, and the *Amelanchier japonica* with dark red. J. R. TRUMPY.

Kissena, L. I., Oct. 31, '96.

IRON-GLAD EVERGREENS.

The following list of evergreens is perfectly hardy in the northwest:

AMERICAN ARBOR VITÆ (*Thuja Occidentalis*) and all of its varieties.

FIR TREES (*Abies*).

Balsam fir (*A. balsamea*).

Fraser's fir (*A. Fraseri*).

Siberian fir (*A. Sibirica*).

Colorado white fir (*A. concolor*).

PINE TREES (*Pinus*).

White pine (*P. strobus*).

Red pine (*P. resinosa*).

Mountain pine (*P. Mugho*).

Scotch pine (*P. sylvestris*).

Austrian pine (*P. Austriaca*).

The pitch pine (*P. rigida*), and Wisconsin gray pine (*P. Banksiana*) are both hardy, but not worthy of cultivation.

SPRUCE TREES (*Picea*).

Norway spruce (*Picea excelsa*).

White spruce (*Picea alba*).

Colorado spruce (*Picea pungens*).

Douglas spruce (*Pseudotsuga Douglasii*) from Colorado.

The red and black spruces are also hardy but hardly worthy of cultivation.

JUNIPERS.

Juniperus communis, *procumbens*, and *prostrata*. The red cedar (*Juniperus Virginiana*) is not worthy of cultivation as it fails as a hedge plant, is dingy in winter, and although very durable wood, yet it takes fifty years to grow a single fence post from seed. The Irish juniper is not hardy.

Rhododendrons and broad-leaved evergreens are not hardy in the northwest. If nature ever attempted it she made an absolute failure as the bearberry is the only one we have and the leaves are not larger than the ear of a mouse. [The above was sent to us for publication in GARDENING. The following is part of a private letter but it is so good that we have asked for and received permission to use it too.—Ed.]

All the evergreens that are hardy in the northwest are hardy in the east. The American arbor vitae (*Thuja Occidentalis*) is hardy, also all the many varieties it has produced, including *Hoveyi compacta*, *Siberica*, *pyramidalis*, golden, etc., but the Pacific coast species are not hardy. I may say further that there is not a Pacific conifer in all the Pacific slope that is hardy in the northwest except the few species that are found in the Rocky Mountains, including *Picea pungens*, Douglas spruce, *Abies concolor*, *Picea Englemanni* and *Pinus ponderosa*, and even the seeds of these if collected on the Pacific Coast will not produce trees that will stand this climate.

Some scientists (of the rising generation) dispute this fact on scientific principles, but Dr. Engelman, C. C. Parry, C. S. Sargent, Thos. Meehan and the experienced, know this to be a fact, and Mr. Parsons and many of the old nurserymen have learned it by sad experience. Mr. Parsons of Flushing imported a large quantity of Douglas spruce seeds at the time of the California gold discovery forty-seven years ago, and seedlings raised from them were planted liberally all through the east as far south as Washington, D. C. and

failed in a few years. During the summer of 1868. I noticed Douglas spruce trees that had been brought from Pikes Peak, Colo., by gold hunters in their wagons, and planted in Kansas, Omaha and western Illinois, that had stood for several years and had started from the terminal bud every spring after the year they were planted and the same was true of *Picea pungens*.

About 1870 Prof. C. S. Sargent received from Prof. C. C. Parry, Douglas spruce seeds from Colorado and they produced trees that are now 30 to 40 feet high and as hardy as the Green Mountain native conifers, the same is true of the seeds I received from C. C. Parry at the same time. In 1865 I imported from California large quantities of coniferous seeds of all the noted species and continued it for 3 years during which time I paid over \$1,500 for California seeds alone, as they had grown well and were covered and protected the first two winters. The final result was that not a tree from all these seeds ever left the nursery except in smoke from the brush piles in which they were burned.

After I saw the trees brought by the Pikes Peakers, and had received seeds of *Douglasii* and *pungens* from Colorado, Burnet Landreth sent me several pounds of *Douglasii* to raise the seedlings until 2 years old to plant in his forests in Virginia. We sowed them side by side with our Colorado seeds, his seeds made a more rapid growth than ours, at the end of the two years ours were sound and hardy and his were so that they were all dead or injured in the spring of the third year.

I could write a volume of such experiences. I used to grow large quantities of red cedars from seeds. One year the trees did not seed in this county, I bought a few pounds in southern Illinois and a larger quantity in Tennessee, but the trees raised from them were tender and worthless here.

I saw a fine conifer over 20 feet high standing on a bleak hill side fully exposed to the north and west, on Mr. Hitchcock's grounds in Hanover, New Hampshire. I went into the grounds and examined the tree and found it to be *Abies Nordmanniana*, now I have tried over and over again commencing over 40 years ago to grow a specimen of this tree, but always failed after I left the leader exposed in winter. I went to see Mr. Hitchcock and we found that he had the same experience in trying to raise a black walnut tree, while we had them, fine trees three feet in diameter, cut up for cordwood when the first railroad ran through to Milwaukee.

In all my experience with coniferous seeds from the Pacific Coast with the thousands on thousands of miles I have travelled and the time and expense and the trying of patience and strength I have not been able to hold one tree for the term of five years.

My last experience was four years ago with the weeping spruce. I had written to seed collectors to get me the seeds at any cost. My son who was then in California tried every way to get some one to collect it, so I wired him in August 1892 that I would come out and we would have it. The small group of these trees stand on the summit of the Siskiyou Mountains where it crosses the coast range, and I thought that trees on such an exposure would stand like those on the bleak promontories in Colorado. After leaving the railroad on the highest point we went 40 miles in a hired carriage, left it there, and another day brought us

up to the summit of the peak of the Siskiyou Mountains on horse back, but such a day; how can I describe it? I was in ecstasies from the waist up, but in abject misery from my waist down. Such noble grand trees, varying in species as we ascended, but when we reached the summit in the evening the fog was such as I had never experienced. I have seen the heaviest London fogs, and the heaviest fogs in the Redwoods on the coast, but I never saw a fog like that Siskiyou fog. We took men with us that could climb like squirrels, we had eight pack horses loaded with the small cones and sent down to the coast and shipped them by the Pacific Ocean to San Francisco then my son went back over this whole route and took men and collected the seedlings, only two hundred or so in all, while he could have collected millions of other kinds.

The cones of this tree are small, the seeds run 70,000 to the pound. I sowed the seeds myself and they came up finely and we had over 200,000 growing well. How could we carry them through? They made their first growth; in commencing their second growth many went back, at the end of the season we had half still living about ¾ inch high, and they stood the winter well with protection, the second spring they started in, we had hopes, but in the attempt to start their second growth they all failed and so did all the transplanted trees my son brought before the close of the third year.

These pages were written for you personally. It helped me to kill time this unusually cold morning. [Whenever such grand old veterans in horticulture as yourself, Isaac Hicks, John Saul, William Saunders, Josiah Hoopes, and several others wish "to kill a little time," please do it as you now have done, making us the recipients of your labor.—Ed.]

ROBERT DOUGLAS.

Waukegan, Ill., October 11, 1896.

TREES FOR STREET PLANTING.

THE SILVER MAPLE, all things considered, continues to give satisfaction as a high class street tree; it would not be far wrong to give it the preference if one was confined to the use of one kind of tree. Much of its value, however, depends upon the treatment it receives when young. Beginning in the nursery, a distinct central leading stem should be maintained, and any luxuriant branch likely to contest supremacy should be promptly pruned back; this treatment should be prominent for several years after planting, but no heading back of the main stem, should be allowed.

THE SUGAR MAPLE is the most beautiful of our maples, and an admirable street tree, especially so is the variety known as black sugar maple. These are of slower growth than the silver maple, but much depends upon the nature of the soil in which they are planted, where a good depth of good soil is afforded them they soon attain effective size. Their massive growth rather tends towards a too dense shade, but when this occurs a judicious thinning out of the branches will modify the evil.

THE NORWAY MAPLE is justly held in high estimation for street planting. Its growth is somewhat slow, and rather dense and compact, but it is of sturdy habit, and is rarely injured by storms.

AMERICAN WHITE ELM is a good tree for wide streets. Its only drawback is its liability to injury from the leaf eating beetle, although in some localities it is

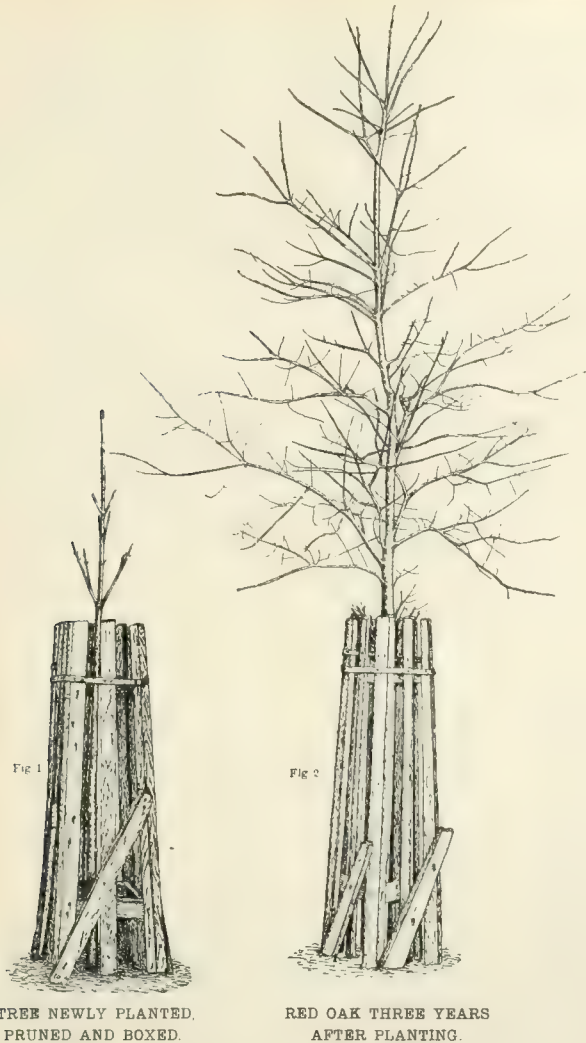


Fig 1

TREE NEWLY PLANTED,
PRUNED AND BOXED.

Fig 2

RED OAK THREE YEARS
AFTER PLANTING.

comparatively exempt from this pest, which prefers foreign elms, and where these exist the beetle is likely to be on hand. Spraying with arsenic mixtures, Paris green or London purple will destroy the beetles, and the limited amount of earth surface around the stems in cities, is not favorable for their hibernation.

THE AMERICAN LINDEN is a fine tree of lofty, spreading habit, and requires plenty of room, also must have good soil and ample feeding range, to maintain vigor, in poor soil it becomes a sorrowful looking object during dry summers.

THE SYCAMORE OR PLANE TREE also ranks as a large growing tree, but it is well fitted for street planting, as also is the foreign species which is rather more compact in growth. Although naturally the plane tree is of wide spreading and uncouth growth, no tree responds so readily to pruning into any desired shape. Large and old trees may have all branches cut off within a few feet of their main stems, and will send out shoots with great regularity and become pyramids of verdure.

THE SCARLET OAK is a fast growing tree and one of much beauty; of bright green summer foliage, and fine scarlet coloring in autumn.

Other oaks of special merit for street planting are the pin oak and willow-leaved oak. These have been too much overlooked in all kinds of ornamental planting in parks and avenues.

THE GINKGO TREE. I predict this as a coming street tree which will become

popular as its value becomes known. There are several fine lines of it in this city. The plants have heretofore been scarce, but this need not much longer be a drawback, as many of the older trees throughout the country produce fruit freely, and they are easily raised from seed.

PLANTING.

In most cases the necessary grading of streets will involve either cutting down or filling up, so that the original surface is rendered unavailable for tree roots; it then becomes necessary to present each tree with a sufficient quantity of good soil to enable it to make a good start in life. Holes 8 feet in length, 2 or more feet in width and 2 feet in depth should be prepared by excavating and removing the contents, substituting good soil in its place. The soil needs to be rather dry when filling, and well packed by placing it in thin layers and tramping it solidly; no manure or undecomposed organic matter should be mixed in the soil. This sized hole, thus filled with good soil, will insure a good growth for six years or more, and, unless the surrounding soil is very bad indeed, the roots will extend into it and so maintain tree growth for an indefinite time.

DISTANCE APART.

It is a mistake to plant trees too closely together on streets. The larger growing tree, such as elm, linden, silver maple and sycamores should be set at least 50 feet apart. The Norway maple and those of

similar growth may be set 35 feet apart, and this is quite close enough for any kind of street tree, and as too much shade close to dwellings is a great evil and injurious to health, no trees should be nearer a building than 20 feet; 30 feet would be safer. The aim in street planting should be to shade the sidewalks and promenades, rather than that of shading dwelling houses.

PREPARING TREES FOR PLANTING.

In cities where the setting of trees is to be prosecuted systematically, so as to keep pace with the extension of streets, a tree nursery should be established. This will prove economical in many ways; only the kinds required may be propagated, and the young plants will be completely under control as to transplanting; in the nursery once before removal, thus preparing them for successful transplanting; they can also receive such pruning as may be deemed essential, the main object being to secure a well-defined central stem, removing, from time to time, such side branches as appear likely to dispute in vigor of growth, with the central leading shoot. It is seldom necessary to prune the leading shoot, and special care must be given not to shorten it beyond the current year's growth. In street trees the removal of side branches is necessary, otherwise they would interfere with the use of the sidewalks and streets; from six to eight feet of a clear stem will be required; this in some measure weakens the body of the tree, and diminishes its resisting powers, especially during the first decade after planting, when a heavy foliaged top has to be supported by a relatively slender stem, but this is unavoidable with city trees.

PLANTING THE TREES.

As a matter of course, trees should be taken out of the nursery grounds with care, securing as many of the strongest roots as practicable; small fibry roots are not of value, as they soon decay, and new growths push from the older and firmer portions of the older roots, so that the instructions frequently given relative to saving fibry roots have no merit worthy of notice.

In ordinary planting, a tree should not be set deeper in the ground than merely to cover the upper tier of roots with two or three inches of soil; but in setting them in paved or concreted sidewalks and streets they should be set somewhat deeper, not so as to bury the stem more than three or four inches, but all the roots should be slightly bent downwards so as to prevent surface rooting which disturbs bricks and concrete, and becomes a source of great annoyance to pedestrians.

It is also worthy of attention, when planting a line of street to confine the trees to one kind as far as the line extends, as a variety of forms and growths in a planting of this kind only tends to an unpleasant confusion of irregularity.

When the tree is set it should receive protection against accidents and as a means of support, by a wooden box. The box should be about six feet in height, made of strips three inches in width and one inch in thickness; these are fastened to square frames made of heavier material, one near the bottom and one near the top; the bottom frame is sixteen inches square, and the top frame twelve inches square. The box is fastened when set by driving four stakes in the ground, one at each side, in a slanting direction, well nailed to the box. The tree is fastened by straps of leather passed round its stem, and nailed to the top frame;

these straps should be maintained as long as the box remains, otherwise the tree will be injured by rubbing against the box in windy weather. This box should remain as long as it is able to support the tree during storms, afterwards it should be removed, and the stem encircled by woven wire netting, fastened loosely around the tree as a protection for injury against horses biting the bark, or from other causes which might harm the tree.

INSECTS.

The most troublesome insects on street trees are caterpillars, such as the fall web-worm, the bag-worm and others. The elm leaf-beetle and scale insects or bark-lice are also likely to be found on trees, especially those in declining vigor; but it is only a question of labor in appliances to keep trees from material injury from any of these defoliators. All kinds of leaf-eating insects can be destroyed by spraying with arsenical mixtures, and bark-lice are destroyed by kerosene emulsions; the preparation and application of these insecticides are generally understood so it is not necessary to further allude to them here.

Sometimes trees that are sickly become so heavily infested with scale insects that the entire surface of the tree is covered with them; these can be cleaned by cutting them back severely just as the leaves are falling in autumn, completely divesting the trees of all spray and small branches, leaving nothing but stumps of the heavy branches which are then coated with ordinary lime whitewash. This will smother the insects and clean the tree; it is heroic treatment, but it is effectual, and the trees will in time recover a new top, and again assume a healthy condition. All kinds of scale on all kinds of trees can be destroyed by a covering of lime-wash.

WILLIAM SAUNDERS,
Supt. of Gardens and Grounds U. S. Dep't
of Agriculture, Washington, D. C., Oct.
23, '96.

AN AUTUMN RAMBLE.

A lovely day is this 22nd of October. Inspired by its beauty and the wealth of foliage we took a walk to view the appearance of some of our variegated and parti-colored plants that give such a charm and variety to our autumn landscape.

The variegated weigelia, privet, althea and dogwood are desirable for effect to break the monotony of continuous green. For purple shades we give the preference to the purple plum and purple barberry. They are perfect even now and hold their color through the season while most other purple trees fade the last of summer. The evergreen euonymuses were beautiful with leaves bordered or splashed with white and yellow, but we fear for their hardness. The variegated honeysuckle is a perfect beauty and the *celastrum articulata* with such a profusion of seed pods far exceeding our native species is a surprise. *Euonymus radicans* with silver foliage is a low vine or bush. What pretty leaves the *Euonymus alatus* has. It is a curious bush, leaves bright red and showy. What a profusion of colored leaves the Japan dogwood (*Benthamia*) has and so too has the flowering dogwood. (*Cornus Florida*) and *Cornus Kousa* is easily grafted on our common dogwood. Thunberg's barberry is in its brilliant color, and its red berries, in addition to the leaves render it a great acquisition to our list. With regret we notice our *Caryopteris mastacanthus* has been slain by Jack frost; it is one of, if not the most lovely late flowering shrubs we have, and the *Desmodium penduliflorum*



ALSTROEMERIA AURANTIACA.

(*Lespedeza sieboldii*) has parted with its beauty.

Let us take a look at our yellow leaved friends. Here is a tall yellow poplar, but the country is full of yellow leaves, dyed by approaching death, and we, like W. C. Bryant, dislike yellow-leaved trees, they look sickly and unnatural throughout the season; give us bright, cheerful colors, fresh and healthy looking, and unless the leaves are mottled or margined with red, green or purple we esteem them not. *Itea virginica* is a modest plant and the foliage is bright, so too, is the bridal wreath spirea and its relative *Thunbergii*. But we could go on enumerating the oaks, *Liquidamber* (Sweet Gum or Pepperidge) and other gayly dressed trees, not omitting the sumachs. The *Lonicera Heckrottii* blooms almost till December and it is desirable, but little known, and the snowberry white and red help to make our homes attractive at this season. But none of these are superior to the Japan maple *atrosanguinea*, so rich in color, charming in form, delicate and ladylike; it is not strange that these little trees are such favorites. We have omitted the black alder (*Ilex verticillata*) with its profusion of red berries, and our American and European euonymuses. To see a fine grown cypress (*Glyptostrobus pendula*) at this season is a novelty but it is a magnificent sight.

ISAAC HICKS.
Westbury, L. I.

and broken off in the lifting, so I mulched the soil heavily where they had been planted. The next spring I found quite a little group of plants there which came up and bloomed.

The following winter, and ever since, I allow all except two plants to remain and protect them as follows: A heavy coating of dry leaves is put immediately over them, and a box with a tight bottom inverted over the leaves. Then a coating of strawy manure or tops of perennial asters or any rough litter is put over the box and on the earth some distance around. They come up smilingly each spring and grow about three feet tall, increasing quite rapidly. The soil in which they are planted is well drained and rather light. I noticed that plants remaining in the ground bloomed earlier than those disturbed, and in order to prolong the season of bloom, I now take up two plants and winter them in the cold frame.

Their flowers are very satisfactory when cut as their lasting qualities in the house are excellent. On the plant the bloom is quite profuse for some six or more weeks if the seed pods are cut off.

Highland Park, Ill. W. C. EGAN.

CLASSES AND VARIETIES OF ASTERS.

The engravings show typical flowers of thirty classes and varieties of China asters just as they actually are, not as some artists imagine they ought to be, or as they are usually represented in engravings. The distinctive characteristics of some of them cannot be shown in photographs of the flowers alone as they vary more in the habit of the plants in some cases than in the flowers. The flowers were all a little above the medium size and I took particular care in arranging and photographing them to show the comparative size as accurately as possible.

No. 1 is Lady White; 2, Ball or Jewell; 3, Victoria Needle; 4, Boltze's Dwarf Bouquet; 5, Ne Plus Ultra; 6, Imbrique Pompon; 7, Dwarf Pyramidal Bouquet; 8, Triumph; 9, Needle or Hedgehog; 10, Pompon Crown; 11, Quilled German; 12, Pompon Needle; 13, Pyramidal-flowered German; 14, Harlequin; 15, Globe-flowered German; 16, Princess or Snowball;

The Flower Garden.

THE PERUVIAN LILY. (*Alstroemeria aurantiaca*)

This plant with its beautiful light orange-colored, orchid like flower is a native of Peru and not supposed to be quite hardy here. Acting upon this supposition when I first grew it, several years ago I planted it in galvanized wire baskets, something like an office desk waste basket, but made of heavy galvanized iron, and when winter came placed these in the cold frame. The plants are root spreaders and I noticed that when taken up in the fall their long slender succulent roots had wandered out of the basket,



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



19 20 21 22 23 24 25 26 27 28 29 30

CLASSES AND VARIETIES OF ASTERS.

17, Betteridge's Prize; 18, Crown or Cocardeau; 19, Giant Comet, the Brick; 20, Comet; 21, Dwarf Queen; 22, Goliath; 23, Victoria; 24, Giant Emperor; 25, Truffant's Pæony-flowered Perfection; 26, Rose-flowered; 27, Semple's or Vick's White Branching; 28, Princess or Snowball; 29, Japanese; 30, Chrysanthemum-flowered.

L. W. GOODELL,

Pansy Park, Mass.

MY FLOWER GARDEN IN WINTER.

Many of my plants are wintered in my cellar which is dry, being well cemented; all windows are made tight for the winter except the eastern which is opened as much as the weather permits; the door not opening out doors can often be open when the window is shut. It is never musty nor does it freeze, for fear of which in intensely cold weather, I burn a coal oil lamp or coal stove.

I first took up my *Crinum Moorei* and without trimming hung it in the cellar, when dry well put it into a paper flour sack and hang back until March, then pot it and grow indoors until May, then plant it in the garden in sunshine morning and evening, but shaded by the house in the middle of the day. I had eight lovely blooms with this treatment and never any before.

Tigridias and gladioli after being dried off are topped, put into paper bags and hung to the ceiling of the cellar. I am trying tuberose the same way this winter.

The dahlias which were marked with strings as nearly their color as possible before frost, are now dug and the roots put on the floor of the cellar under the bins, being sure each root touches the floor, so none get too dry.

The cannas are treated the same way only the dahlias have no dirt to them and the cannas have all that will stick, and after placing them, all the holes between them are packed with moist, not wet, dirt, these I leave just so until after the real cold weather is over when they are taken out and looked over; if any are rotting they are cleaned off and put back until time to put into a rather cool hotbed for sprouting. The dahlias are then pulled to the light, and left on the floor to sprout.

Montbretias are taken up by the shovelful and put on the cellar floor, dirt and all; part I leave in the garden and bank slightly with earth; these will generally live with me and bloom the best.

Fancy caladiums were put into pots and the leaves allowed to die by degrees, then the earth to dry, when they were

covered, to keep out mice and put, on a high shelf in my dining room, which never freezes.

Cacti will be put on the same shelf after awhile and given the least bit of water during the winter.

Lemon verbenas are planted against the chimney of my sitting room, where there is a constant fire; when the leaves die, will cut it to the ground and cover it with pine leaves. It has lived through several winters hers.

Hydrangeas are cut down within four inches of the ground and covered with pine and other leaves.

I find it as great advantage to trim up and cut to the ground or nearly so many things that are left out in winter; they are not then shaken and loosened by the wind. After the wires for the sweet peas, nasturtiums, morning glories, etc., are all taken in and the garden is cleaned up I go carefully over the whole putting a shovel full or more earth over the tops of the desmodiums, sunflowers, montbretias and all such slightly tender plants, and then a little earth well up around the necks of the dwarf phlox, snapdragons, lavender; in fact most plants left out are helped by it. Many plants will stand the coldest weather in winter and be killed by the freezing and thawing in spring. Watch well then and if your banking ha-

not kept them tight and snug give them some more. All is now ready for a coat of well rotted manure.

My fern bed is my darling. It has a back ground of tall box wood that does not show so much in summer but comes out beautifully as the summer ferns die. This and the lovely evergreen ferns from the Alleghany Mountains makes it a feast for my eyes. Whenever not covered with snow I am planting some extra pretty crocuses among the ferns to bloom in spring before the summer ferns wake up to much growth. No manure is put here only their own leaves to enrich th m. I simply trim out the long stems.

MRS. L. C. CHRISMAN.

Rockingham Co., Va.

COBÆA AND OTHER VINES COVERING A CHIMNEY.

I send you by this mail the photograph of "the chimney." You will remember that you have been consulted through GARDENING about a self clinging vine for that chimney, and the Gordian knot has been cut with annuals. The success has been so unexpected that I felt you must see my triumph, as far as a photo will allow you to do so. There is a *Henryii* clematis on the farther corner that has never heretofore reached above the lower window ledge and even now has only spread around in a space some three feet square and produced numbers of large flowers all summer—in fact, there are three now ready for the scissors to-morrow. The annuals are a pot of *Mina lobata* and a white *Cobæa* raised from seed sown in March—and see the growth, for it is fully thirty feet to the eaves of the house, and since this photograph was taken, strings have been carried over the top of the chimney, which is ten feet higher and the vine is nearly to the top now. There was, of course, a bunch of sprays at the top ready to go upward, but for some inscrutable reason they do not appear in this photo. We mean to use only *cobæa* another season because of its cast iron endurance of frost, whereas the *Mina* is almost as tender as a heliotrope. The shrub at the right is a *Lonicera Morrowii*, and the one at the left of the chimney is a *deutzia*, *Pride of Rochester*, both of a handsome shape and about 6 feet high. The blurred look in the *deutzia* is a *tamarix*, and the white trouble in the lower left hand corner of the picture is a *hydrangea* that the photographer seemed to think would prevent our having this view.

Indiana. F. NORTON BIGGS.

PREPARING FOR WINTER AND SPRING; WHAT WE ARE DOING FOR IT NOW.

Frost paid us a visit on the 9th inst., and next day everything was hanging its head in mourning. We will now have to get the garden cleaned up and all dead stuff taken away. But such plants as phloxes and others with stalks that stand up all winter we do not cut, as we like to see the snow hang on them; we put a few pieces of cedar among them, and in this way have something green in the garden in winter. We are also busy making new borders for perennials and filling them; digging up plants that have got to be too large and resetting them. All this sort of work that is done in the fall helps greatly to lessen the spring work. These new borders we are filling with the perennial plants we raised from seed this summer; they are nice sized plants and lift with big balls of roots, and they will all flower next summer. We have about four thousand plants of this summer's raising, and what



ANNUAL VINES COVERING A CHIMNEY TO THE EAVES. 20 FEET HIGH.

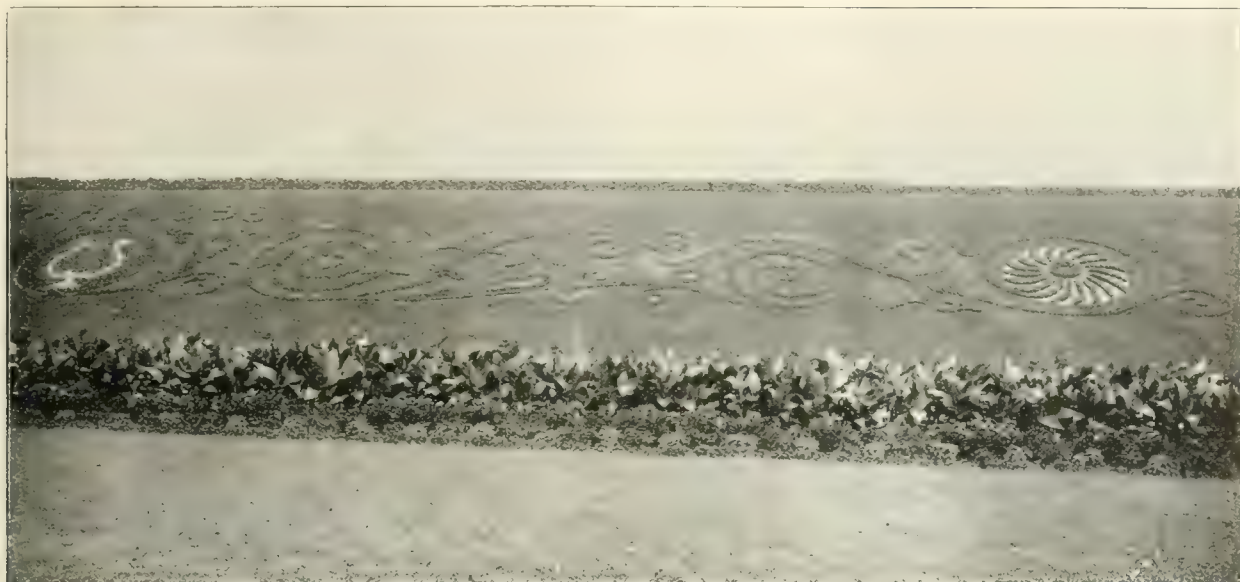
is not needed just now we will put into the reserve garden where we can get them at any time. In preparing the borders plenty of old rotted cow manure and wood ashes were used, as the large rooted plants soon exhaust the soil in which they are growing. Do not plant too close, as the plants soon get to a large size, and leave a few spaces here and there to be filled with annuals to brighten up the border and make it more interesting. In arranging a border of this sort avoid planting in lines. Put a clump of this and that in here and there, putting the tallest to the back and the low growing plants to the front, and plant lots of bulbs in it. Plant them at the same time as you do the other plants, leaving them there to take care of themselves, and by the time the border plants need resetting the bulbs can be taken up and spread out too. A light coating of old manure around the plants will help them, but do not put on your winter protection for some time yet.

We have finished putting up a number of windbreaks; these were made of tall field corn. Posts were sunk in the ground

about ten feet apart and cross stakes nailed to them; the corn was put up on each side of this and tied to these stakes. This makes a fine windbreak, and is the proper thing to put around evergreen trees that are a little exposed to the north and west winds. We also put one at the frame ground to keep the wind from blowing off the straw or other covering. It is a little early for this work, but as the corn was being cut we had it hauled right from the field and put up, saving two handlings of it.

In cutting over the dead stalks of the perennials do not cut over the *Japan iris*. These are better left as they are till spring; put some old manure around the plants and leave it on as a mulch for summer covering. The rhizomes of the *German iris* often get decayed if a covering of manure is put on them, and more so if the winter is open. If you do not intend to lift any of your perennial plants till spring be sure to mark them, as some of them are slow of starting into growth, and you will then know where to find them.

The half hardy plants in the frames,



SCROLL BED IN HIGHLAND PARK, PITTSBURGH, PA.

such as pansies, Canterbury bells, English daisies, forget-me-nots and such-like plants, will be the better for the sash on them on cold nights, but do not coddle them; give plenty of air and have sturdier plants to stand the cold winter. If you are short of foxgloves and have any self-sown seedlings lift them and put into a frame if you can spare the room; they will make nice flowering plants by spring. The same may be said of sweet williams and forget-me-nots. Foxgloves treated as biennials do nicely. They do not winter very well with us here, so we sow the seed in July, and winter them over in a cold frame.

I have spoken several times about the fall asters, but it is now that they are appreciated; mostly everything else in the garden is frost killed, but these hardy asters are still at fine flower, and it takes a sharp frost to hurt them. It is to these plants we must now look for our cut flowers at this time of year, for there are very few flowers even in the greenhouse. Although a few early chrysanthemums may be had, a variety is wanted, and these asters are just the thing; even the commonest of them are welcome. In sheltered places of the garden the Japan anemones are still in good flower; the pink one is much harder than the white; it was cut by the first white frost we had; while the pink one stands up nicely yet.

Schizostylis coccinea is a fine fall and early winter flowering bulbous plant. We have it in flower in the greenhouse; a few bulbs put in a 5-inch pot and planted out in spring make nice plants for lifting in the fall, and their tall spikes of scarlet flowers are quite showy; they last a long time in flower, and coming as they do so late in the fall months they ought to be largely grown.

DAVID FRASER.

Mahwah, N. J.

SOME PRETTY WILD ASTERS.

A collection of wild asters which were transferred from the woods and fields to my garden a few years ago, have done very well and given us much pleasure. The following are the kinds I gathered and every one of them is worthy of a place in the garden: *Corymbosus*, rosy white; *cordifolius*, bluish white; *patens*, blue; *Novæ-angliæ*, purple; *puniceus*, pale

purple; *prenanthoides*, pale blue; *lævis*, bluish purple; *oblongifolius*, light purple and *Novæbelgii*, blue, varying to white. Of these the two that make the best display are *Novæ-angliæ* and *puniceus*, the growth being robust and tall and the flowers showy. Both are found wild in damp places, though, as with many another plant, they do very well in any ordinary garden situation. *Oblongifolius* is an exceedingly showy sort. It makes a rounded, bush-like growth, throwing over all a sheet of lovely light purple flowers in late autumn. It is the only one of those named that is not a native here. I found it growing on the railroad bridge at Harper's Ferry some years ago. *Patens* is of slender, though strong growth, and when a number of the plants are together and in bloom, the effect is most pleasing.

Of those named, the first to flower is *corymbosus*, while *cordifolius*, a rather tall grower with numerous small bluish white flowers, is one of the latest. If these wild asters are dug up in the fall and divided into little clumps and planted carefully and then mulched, they will thrive and flower nicely the next season. I have great success gathering and sowing the seeds. Gather them as soon as ripe and sow them when all have been collected. Do not wait till spring, but sow before the ground freezes. Sow almost on the surface, covering lightly with soil. The seedlings will appear early in spring and will flower the same year in the fall. This is the advantage of autumn sowing, for if not put in the ground until spring, it is not so certain that flowers will follow the same season.

Philadelphia.

J. MEEHAN.

SCROLL FLOWER BED IN HIGHLAND PARK, PITTSBURGH, PA.

Our illustration shows part of the flower garden scroll work on the reservoir bank at Highland Park, facing the main entrance. The pattern is neatly executed and of long flowing design and showed up vividly as a background to a spacious flower garden, on the level between it and the gate. The plants used in it are red and yellow alternanthera, and being on the slope of the bank where the drainage was perfect this wet sum-

mer, they colored up intensely, keeping their color a long time. The white used in the wheel is crushed Ligonier stone. We are indebted to Mr. James Blackmore for the photograph from which our engraving was made.

THE PARTRIDGE BERRY VINE.—H. C. B., New York, writes: "I am just in receipt of some plants from a southern nursery and among them are some marked *Epigæa repens*, but they are entirely unlike plants of this kind that I have had before. I enclose herewith two sprigs for name. My gardener tells me that the plant is a form of the Partridge Berry."

Ans.—Your gardener is right. They are *Mitchella repens*, the genuine partridge berry vine. It is a real pretty non-climbing, carpeting plant under trees and shrubs in our woods, and is exceedingly abundant in New York state, and, in fact, in all our northern states in the woods, and in the mountains of the south. It isn't the easiest thing in the world to establish in your garden, however; but if you get firm sods of it and plant them among your rhododendrons they should take hold and grow all right.

HARDY PERENNIALS for cut flowers in summer.—J. A. L., Akron, Ohio, asks for "a short list of hardy plants for cut flowers during the summer months, I mean such as have long stems. I have many that are pretty to look at in their beds but whose stems are too short for vases." Ans. Pæonies of many kinds, *Trillium grandiflorum*, although wild is still a beauty; lily of the valley, which you should allow to naturalize itself; double and single pyrethrum so lovely in early summer, also the golden coreopsis *C. grandiflora*, which yields so lavishly in June; several bell-flowers, such as the peach-leaved *persicæ-folia* and *Platycodon grandiflorum*; the hybrid delphiniums, which you can raise from seed, German irises for early summer and Koempfer's Japanese irises for late June and early July, spiræas of sorts such as *venusta*, *Ulmæria*, and *filipendula* getting the double-flowered forms of the last named two; *Clematis recta*, double if you can get it, which you can cut in sheaves; the new Golden Glow or double-flowered rudbeckia; phloxes in great variety, giv-

ing flowers from June to September; lilies such as *Thunbergii* in many varieties, *Hansonii*, *superbum*, *candidum*, *longiflorum*, *Japonicum*, *speciosum*, *auratum* and *Wallacei*, *Yucca filamentosa* for mid-summer, the white day lily (*Funkia*); sunflowers such as *mulliflorus* in summer and *orgyalis* and *Maximiliana* for late summer and fall; Japan anemones for from August till October, and tritomas from July till November. There are hosts of others. In fact you will have to do a little experimenting on your own account, for some kinds of plants will thrive better with you than others, you will like some sorts better than others, and the peculiar odor or fragrance of some that are pretty enough in the garden may be objectionable to you in the house.

NATURALIZING BULBS IN THE GRASS.—We are now head over heels in bulb planting. We are naturalizing a great many of them, planting them in the grass and under trees and out of the way places, snowdrops and crocuses are what we are using for this sort of work, but we will also use lily of the valley largely in places where the grass and hardy asters are left to themselves. We are getting from Europe a great many narcissus and iris for naturalizing along the brooks, also some of the newer ones for the garden. D. F., N. J.

The Greenhouse.

FORGING LILY OF THE VALLEY.

Now-a-days lily of the valley blossoms are offered for sale in the New York market every day in the year, this is due to the advantages of cold storage. The lily of the valley that is forced by florists and also by amateurs in their greenhouses is usually imported from the continent of Europe, mostly from Berlin, and comes to us in the form of individual plump pips or single crowns tied up in bunches. These pips have been specially grown for two or three years for forcing purposes, before being sold, and although they are not bulbs they are usually classed among bulbous plants. Now observe something curious about forcing lily of the valley. It must have a period of rest and frost before it will force well, hence is it that this year's roots are seldom in the market before New Year's, and even then the foliage is poor compared with later productions. Before bulbs or other plants force well they require to be well rooted in their pots; not so with lily of the valley, all it wants is sand to steady it, and water, and it blooms beautifully without much root making, and this is why florists grow them dibbled in quite thick in frames in a greenhouse as you see in our illustration, which is engraved from a photograph of a bed in a florist's greenhouse and taken for us by Mr. L. Hallock. Further hardy plants are generally started slowly; not so this one, however, for we plunge it into a sweat box of 80° or 90° right away.

Oh yes, we can grow lily of the valley here just as well as they can in Germany. At Dosoris we grew our own roots and forced about a hundred boxes—soap box size—and several pots of it each winter, but instead of using separate pips, we lifted selected sods of roots and shook most of the earth away from them, enough to let us get them packed into the boxes; then we set them out of doors in a sheltered place with a light covering of earth or ashes over them, to save the

crowns from light, wind or sunshine, and there they were left to the mercy of the frost and snow. We took in a few boxes twice a week, and in this way had flowers from New Year's till we got them outside in May. Our illustration of the potful shows the condition of our flowers at Easter; at that time forcing was easier, and we got excellent foliage as well as blossoms; before March we could not get as fine foliage as this is, no matter how we treated the roots.

WINTER BLOOMING PLANTS.

AMARYLLIS.—This class of bulbous plants is one of the most beautiful of winter bloomers and its culture among the easiest. It has been a matter of surprise to me that amaryllises are not more extensively grown. My system of culture is to repot them after they are done blooming and commence growing; about the middle of May they are placed in a cold frame under slats, where they are grown during summer, by the end of September the bulbs are large, solid and well ripened, when they are removed to a warm house and placed under the stages and gradually dried off. About the middle to the end of December they begin to show flower; they should be sorted over once or twice a week, and those showing flower set upon the stages in a warm part of the house and watered, when they come rapidly into bloom. Where a collection is grown flowers may be had from Christmas till late in spring.

BEGONIAS.—The flowering shrubby begonias are of fine growth and profuse bloomers, and the foliage of many is beautifully marked. They have become quite popular and deservedly so.

BOUVARDIAS.—A few years since these were grown more extensively than they are to-day; this should not be for they are useful both to the florist and amateur, and are fine for winter blooming.

CORONILLA GLAUCA is an old favorite of the greenhouse, it only requires to be kept from frosts, in a light house it will give its pretty yellow pea blossoms all winter. There is a pretty variegated variety of this.

ERANTHEMUM MACROPHYLLUM is a pretty plant with light blue flowers, which are produced profusely during win-

ter. It planted out in May and lifted before frost comes and placed in a warm house it will bloom freely. Lifting it appears to force it into flower.

EUPHORBIA JACQUINEFLORA and *E. splendens* are two of our finest winter blooming plants, and both are of free growth and easy culture.

EUPHORBIA JACQUINEFLORA and *E. splendens* are two of our finest winter blooming plants, and both are of free growth and easy culture. **EUCHARIS AMAZONENSE** is a bulbous plant requiring considerable bottom heat during winter to grow and bloom it well; during summer the plants may be set out doors. *Sanderii* and *candida*, and *grandiflora* are finer sorts. *Francisceas* are beautiful winter blooming plants but little grown; their flowers are purple and very showy; coming from Brazil they like a warm house.

GERANIUMS.—Amateurs who desire plenty of bloom during winter must not overlook the old but beautiful single, semi-double and double geraniums; the two former are the best ones for winter blooming.

JASMINUM HIRSUTUM is a beautiful winter blooming species; its flowers are in wreaths and bunches of purest white and they are deliciously scented. *Grandiflorum* and *gracellinum* are other good species.

LINUM TRIGYNUM has rich golden yellow flowers in great profusion during winter; plant out during summer and lift and pot them before frost and you will have fine plants well budded for blooming.

REINWARDTTIA is very similar to the last, yet distinct, the color of the flowers is lighter, it also is a constant bloomer during winter and a very handsome plant.

POINSETTIAS.—These gorgeous flowering plants are not grown to the extent they were formerly. They may grow as specimens in pots to much advantage and make our houses gay during winter. *Rogiera amana* and *gratissima* are beautiful warm greenhouse plants that grow and flower freely during winter; the flowers are pink in bunches and as fragrant as a heliotrope.

RUPELLIA MACRANTHA.—Plant it out in May and lift and pot it in fall and you will have fine plants, which from check of lifting will flower profusely during winter. Flowers are large in size and crimson in color.

VERONICAS.—The shrubby veronicas we



A POT OF LILY OF THE VALLEY



A BENCH OF LILY OF THE VALLEY

rarely see, yet how beautiful they are. *Reine des Blanches* is a lovely white; *Reine des Blaus*, rich blue; *Reine des Roses*, rose color. Grow them in partial shade during summer; they are of free growth in blooming and the coolest house will suit them.

CYTUSUS (genista racemosus) has rich racemes of golden yellow flowers during the latter part of winter and early spring; there are several varieties and all very desirable plants.

JOHN SAUL.

Washington, D.-C.

OUR GREENHOUSES TO-DAY.

Our greenhouses to-day are filled chiefly as follows:

ROSES in the benches were planted in June. The three most reliable varieties which do best in the same temperature, say 55° by night with 70° on bright sunny days, are *Perle des Jardins*, *Bride and Bridesmaid*. Don't attempt to grow *Papa Gontier* unless you can give it cooler treatment. My neighbor, Mr. Peter Duff, grows the last named very well in a cool house with almost no fire heat, but other roses have mildewed under the same treatment.

CARNATIONS on the benches were planted in September. The house for these should be cool, light and airy. If good blooms are wanted leave none but terminal buds. Lizzie McGowan stands a higher temperature and should be closer planted than most other varieties. The following sorts do best with us: *President Garfield* and *Secretary Window*, scarlets; *La Purite*, a deep rosy pink which has been grown on this place for the last twenty years, showing that it has a fine constitution; *Miranda*, plum purple, the only one I know of this shade; *Armazindy*, white

striped with rose, a new variety with a vigorous constitution and it is a prolific bloomer; also *Meteor*, crimson; and *Alaska*, white.

AMARYLLIS AULICA is coming into bloom just now. We never draw off these entirely. *Paneratium ovatum* is also coming into bloom. Scented leaved geraniums fill a considerable space with us, which we use for cutting. Callas are in 7-inch pots and will get their final shift into 9-inch pots later on. Chinese primroses, libonias and abutilons also occupy considerable space. Flowering begonias need little or no shade just now. varieties such as *semperflorens gigantea rosea*, *nitida* and *rubra* require none; *Olbia* and *Metallica* and varieties of *Rex* do.

Cyclamens are a very important feature for fall, winter and early spring decoration of the greenhouse and go far to fill the void made by the departure of the chrysanthemums. This is the time to sow seed of cannas. We have now in bloom in pots the following, *Italia*, *Austria*, *Alsace*, *Philadelphia* (a beautiful shade of crimson) *Queen Charlotte* and *Florence Vaughan*. In the warmer houses are in bloom, allamandas, euphorbias, anthuriums and the beautiful little violet flowered *Saintpaulia ionantha*.

ORCHIDS—The following are in bloom: *Cattleya Bowringiana*, *C. labiata*, *C. maxima superba*, *Dendrobium Phalenopsis Schrodenianum*, *D. formosum giganteum*, *Lælia*, *Perrine*, *Oncidium unguiculatum*, *O. varicosum Rogersii*, *Pleione Lagenavia*, *Odontoglossum grande*, *Cypripedium oenanthum*, *C. Specerianum* and *Vanda cœrulea*.

CHRYSANTHEMUMS, of course, occupy a great part of our cool greenhouses. We take down the benches in the fall to make

room for them. After they are past up go the benches again and their places will be occupied with azaleas, hydrangeas from the cold frames, carnations in pots which are now in cold frames; violets in pots and boxes; Roman hyacinths, hyacinths, narcissus and other Dutch bulbs; freesias, scillas and ixias; flowering shrubs which we have now in a cold reserve house, such as, genus as *Rhynchospermum jasminoides* and *Bougainvillea glabra*. Besides, many things which are rather crowded now will get breathing room. I may mention that *Lapageria rosea* is in bloom, and so is *Solanum Wendlandii*, which has lilac blue flowers resembling *Platycodon grandiflorum*.

WM. FITZWILLIAM.

Baronald, Orange, N. J., Oct 12, 1896.

THE COLD FRAMES.

These are now filled with pansies, daisies, forget-me-nots and violets. While a little frost may not hurt these plants it does them no good, so keep it away by mulching about the frames and protecting over the sashes with mats, shutters, etc. Let them have all the sunlight possible. Polyanthuses, Canterbury bells, anemones, ranunculuses, and the like need less coddling than the pansies and violets, but the more careful we are of them in winter the earlier they will start into bloom in spring. Be very particular to have the ground about the frames so graded that no water can possibly lodge around it in winter; and provide for protection from driving, piercing winds.

NEW VIOLETS.—We are trying some new ones we got from France, but I cannot discern any improvement in them over older varieties.

D. F.

GARDENING

WILLIAM FALCONER, Editor.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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RESIGNATION OF EDITOR.

With this issue of GARDENING I resign from its editorship. I am obliged to do this because of my inability to attend properly to my park duties and the paper too. Schenley Park consists of 450 acres of exceedingly uneven ground with long runs of deep precipitous ravines. The land is stiff clay and rock. A vast deal of work consisting of bridge building, road making, grading, etc., has been and is still being done, and a considerable area of the surface has now been got in readiness for planting. So far there has been no permanent planting whatever in the park, but next spring we are to start in earnest setting out trees, shrubs, and other plants for this effect. Up till now my time has been principally occupied in work as above, mostly in the field, and in the vast conservatories. Now, however, that outdoor work will soon stop practi-

cally, I must devote my attention to getting up planting plans, and designing arrangements and work for next year; this takes deep, far-reaching thought and most careful study not only for immediate effect, but for landscape beauty, interest, and utility in the future. My best work of this kind has always been done in the quiet of my "den" at my own home at night and not in the office by day, and in order to do this work satisfactorily I must do it at home.

Very few of our readers know that all of the editorial work on GARDENING has been night work, but such is the fact. The editorial department in all of its detail, writing, getting matter together and preparing it, furnishing the pictures for illustrations, correspondence, etc., has all been done by me at night. Though often arduous it has been delightful work, work that I love, the subject is one my heart is in and my relations with our readers have always been of the most friendly and trustful nature. But to continue to edit GARDENING and do justice to my park work too are more than I am able for, and therefore is it that I am compelled to resign from the editorship of the paper. From the beginning it has been my object to make GARDENING clean in every detail, helpful to the amateur, concise, plain, practical and truthful, in all its teachings, and absolutely independent and impartial, and unkind personalities or disrespectful references to correspondents or contemporaries have been absolutely debarred from its pages. We have never been at a loss for matter for the paper, it has been filled by the voice of the most experienced horticulturists in the United States. Our illustrations too have been a glory from the beginning, and in point of truth, beauty, and aptness, they never have been surpassed, and they come pouring in upon us from our appreciative readers as fast as we can use them. The Dosoris pictures—there are lots more of them—have been marvels of beauty and instruction; than that Paradise of horticulture no other place on this continent could have furnished anything like as many, and we are deeply indebted to and thank its noble proprietor for the substantial aid and encouragement in this and other ways he has accorded to GARDENING.

The future of GARDENING is in the hands of the board of directors, but you can depend on my aid and sympathy and all the good that I can do for the paper shall be done. Not only am I twice over the largest stockholder in the paper, but I love it.

WILLIAM FALCONER.

CHRYSANTHEMUM GOLDEN WEDDING seems to have outgrown the disease to which it was a prey when it first made its appearance here and in Europe; cultivators now think the evil was due to an enervated constitution caused by overforcing in order to get up a big stock of the variety in a very short time.

OUR COMMON WITCHHAZEL is in splendid bloom in the ravines, indeed we never before saw it so fine. We believe this is due to the unstinted moisture all summer long and consequent strong well developed growth. Bare of leaves and covered all over thickly with its small yellow flowers it is really a very pretty and attractive shrub.

WILD ASTERS were never more plentiful, vigorous, or beautiful than they have been this season; they lined our woods and waysides in great beauty. No doubt this has largely been due to the continuously moist summer and consequent unchecked growth. As these asters have

ripened and spread about a large quantity of seed we shall naturally look for a greater abundance of these gay plants another season.

ECZEMA CAUSED BY ROMAN HYACINTHS.—A correspondent of the *Gardeners' Chronicle* writes: "A form of eczema has been caused by handling bulbs of the common Roman hyacinth, or possibly by the buckwheat packing in which they are received in this country." We noted a year ago an eczema of this sort caused by handling tulip bulbs, the fine hairs of the broken skin of the tulip causing it. Without rather pointed evidence to the contrary we must regard the case against the Roman hyacinths as "not proven."

THE GOOSE FLOWER (*Aristolochia gigas* var. *Sturtevantii*).—Mr. L. Burrows of Decatur, Illinois, writes in praise of it as a summer outdoor vine. He got a plant last March, planted it in an 18-inch square box, and in summer set it outdoors, giving it a 6x2 feet trellis. This it completely covered, and bore ten flowers each one about the size of a canvas back duck, in fact, the flower measured 12 to 14 inches from top to bottom, while the tail like appendage was 17 inches long, making in all a total length of about 31 inches for the flower.

QUEEN VICTORIA'S OLD GARDENER at Balmoral is dead. He had been gardener to Her Majesty for 44 years. In '92 on account of failing health he retired from the garden and was given a pension and residence by the queen, and during his late illness by her special desire he was attended by Sir James Reid, her own private physician. This is only one among many instances of the kind motherly nature of that dear, good old lady. But we haven't to cross the ocean to find deep, tender spots within the human breast, we know of them right here at home.

THE SURVIVAL OF THE UNLIKE is the name of a new book by Prof. L. H. Bailey, and published by the Macmillan Co., New York. In size it is 5x7½ inches, and it contains over 500 pages; the price of it is \$2. It is made up of a collection of evolution essays suggested by the study of domestic plants. The author denies the common assumption that organic matter was originally endowed with the power of reproducing all its corporeal attributes, or that, in the constitution of things, like produces like. He conceives that heredity is an acquired force, and that, normally or originally, unlike produces unlike.

OUR PICTURES OF CHINA ASTERS.—In these pictures page 53 we have given you what has never before, so far as we know, been given to the public, namely the actual condition, appearance, and relative size of thirty distinct kinds of China asters as grown in the open field. For the last two years we have been trying to get this picture, and have only now succeeded. Compare the blossoms as shown here with the full, symmetrical beauties you see in catalogues and books generally, they don't look quite alike, but these are the plain truth. In making up your seed list next year consult these pictures, they may be suggestive.

QUINCE CULTURE.—The Orange Judd Co., New York, sends us a new and revised edition of Mr. W. W. Meech's Quince Culture. It is a book 5x7½ inches and contains 180 pages, and it is quite freely illustrated. In it we find all about the quince, and the different varieties of it,

also how it should be grown; we are told how to propagate and prune it, and promote its fruitfulness, likewise how to gather, keep and market the fruit. The diseases of the plant are minutely handled and its insect and other pests get considerable attention. It is the best and most complete literature on the subject that we have got. Its price is \$1.

CHINESE PRIMROSES.—At Dosoris we used to buy the very finest strains of seed that money could purchase and better flowers than we used to have there [See illustration in *GARDENING*, page 91, December 1, '93.] were not to be found on this continent. At Schenley we have some 3,000 plants now coming into bloom and the best of them are not equal to the worst we used to have at Dosoris. Why? Because the strains of seed were inferior. Their vitality was all right. The American trade rejects expensive seeds, and European seed dealers have a text "Anything is good enough for America." Our seedsmen know this just as well as we do. Now let us get beyond this sort of thing. Charge what you please, but get for us the very finest strains of flower seed the world produces; far better have one superb blossom than a wheelbarrow load of rubbish.

VEGETABLES UNDER GLASS is a book of 95 pages published by Henry A. Dreer, Philadelphia; price in paper covers 25 cents, in cloth 30 cents. Here is a plain matter-of-fact book telling us how lettuces, radishes and other crops are grown in cold frames, hotbeds and greenhouses, and it is freely illustrated with pictures of vegetables, greenhouses and methods of cultivation. This book is a straightforward statement of fact and gives us the how and why of vegetable growing under glass by the market gardeners of Arlington, near Boston, and other gardening centres. Now this little book takes pains to give one the inside and exact facts in the line of gardening on which it treats, and in this it differs most mightily from a not-many-years-ago published pretentious book on market gardening whose sole aim seemed to be to jumble words and say a lot, but tell one mighty little. In fact this is the best little book of its kind that we have seen since Peter Henderson wrote his "Gardening for Profit." And one most refreshing thing about it is that Dreer's name isn't hauled into the book on every page, or, in fact, at all. This greatly strengthens our confidence in it.

PRIZES FOR CARNATIONS.—Mr. C. W. Ward of Queens, N. Y., offers four special premiums of silver cups, each valued at \$25, for the best new pink carnation, and best new white one for commercial purposes, for the best new carnation of any color, open to amateurs only; and for the best of any color open to private gardeners only. The vase of each must contain 24 open flowers, 6 buds showing color, and 6 buds half opened. Commercial flowers must be at least 2½ inches in diameter, and exhibition flowers 3 inches. The calyx in all cases must be perfect, and the stems must be quite stiff and at least 15 inches long. These prizes are to be competed for at the annual exhibitions of the American Carnation Society, and Mr. Ward offers to keep up these premiums every year. We are delighted to know this, for good must come of it. Mr. Ward is one the largest growers of carnations in the country and no one grows them better than he does and he is a specialist not only in their cultivation, but in hybridizing and raising new varieties of them, and he is in such a position that he

can afford the indulgence and to be pretty exacting too. The carnation that will be perfectly satisfactory to him must be a pretty good flower.

THE NURSERY BOOK—We have received from MacMillan & Co., publishers, New York, a copy of the third edition of Prof. L. H. Bailey's book entitled "The Nursery Book." It is 7x5 inches, contains 365 pages, and costs \$1. The object of the book is to teach one how to propagate plants, and with this end in view it tells us how to increase plants from seeds, layers, cuttings, budding, grafting and so on, and in words and by illustrations it endeavors to make this very plain to us. The whole detail is given, and in addition to propagation directly, a deal of information incident to the preparation of plants before propagating from them and caring for them after they are propagated is furnished us. Then in alphabetical order a long list of plants is given with notes on their separate propagation. There is also a glossary of eleven pages in which the meaning of the term cion, pseudo-bulb, knaur, bulbel and the like is given. But this glossary is needed, for without it how on earth could we tell what "cuttage," "graftage," and "seedage" mean? There is a full and excellent index to the work. It is a good and useful book and we heartily recommend it.

BULBS FOR THE FLOWER GARDEN.—The earlier in October we get our hyacinths, tulips, narcissus, crocuses, snowdrops, and the like planted out in the garden the better; this is not so much because early planting is imperative as that the earth is likely to be drier and in better working order then than later. All of the very early blooming bulbs should be planted early as it is natural for them to root well before winter sets in, and the better they are rooted the less likely they are to get heaved out of the ground by frost in winter. So far as common bulbs as hyacinths, tulips, narcissus and the like are concerned they can be planted with perfect safety just as late in the season as the ground remains free from frost. If you have not already planted any you should set out a few for their blossoms are exceedingly cheerful in spring. In parks and pretentious gardens big beds are filled solid with certain kinds of hyacinths and tulips so as to make a great display of color, well that's in their line, you needn't imitate it. If you don't wish to go to the expense of filling up a whole bed, plant the bulbs in little bunches here and there in your perennial borders or in the front of your shrubbery clumps. And when it comes to lilies, narcissus, bulbous irises and most anything aside from hyacinths and tulips they look better in mixed borders than in solid beds, besides, while we can lift and remove the two last named about the end of May to make room for bedding plants, the foliage of the narcissus, irises, and many of the other kinds is too green to be cut over so soon without injuring the bulbs for good work next season.

Chrysanthemums.

EARLY CHRYSANTHEMUMS.

The following chrysanthemums were in bloom October 15 at Mr. T. H. Spaulding, Orange, N. J.; Lillian Russell, silvery pink; Robt. B. Laird, crimson, reverse bronze; Marion Henderson, yellow; Au-

turn Bride, incurved white; Daydawn, color of Daybreak carnation, faint pink; Glory of the Pacific, pink; M. M. Johnson, incurved, golden yellow; Rose Owen, of English origin, creamy white suffused and dashed with pink; J. H. Ruchman, a bright golden reflexed variety, synonymous with H. Hurrell; Pink Ivory, similar in all respects to that excellent variety except in color.

Mr. Spaulding's chrysanthemums with a few exceptions are all planted in benches with three inches deep of soil. They are grown to single stems chiefly. They use ground tobacco stems on this place for fumigating purposes and claim that they are less injurious and equally if not more efficacious for the destruction of insect pests.

WM. FITZWILLIAM.

ORANGE, N. J.

Roses.

ROSE HOUSES, PROPER TEMPERATURE FOR.

Kindly tell me what you consider to be the proper temperature for rose houses at this time of the year, considering that the plants are in fairly good condition, say for American Beauty and tea roses.

Allegheny, Pa.

A. H. F.

Referring to inquiry as to the proper temperature to run rose houses at this season of the year, would say that very much depends upon the varieties grown, but assuming that your inquirer is an amateur and therefore growing a number of varieties of roses in the same house, and that the plants are in good health, a day temperature of from 75° to 80° on clear days and 65° to 70° on cloudy days with a night temperature of 60° is about right. In a general way it is safe to advise a temperature approaching the highest limit given above when plenty of ventilation is given, nearing the lowest limit as ventilation is reduced. Great care should be taken to avoid sudden changes at any time as rose plants are very like a delicate child, in their sensitiveness to draughts, chills, etc., and will as readily "catch cold" as evidenced by mildew (always traceable to carelessness) and various other ills. The fall and early winter are the most trying time of the year and constant and unremitting attention must be given to the little details or failure is certain to follow. The above temperature is suitable alike for such sorts as Beauty, Bride, Bridesmaid, Perle, Mme. Cusin, Wootton, Niphetos, Test-out, etc.

PAUL M. PIERSON.

Scarborough, N. Y., October 9, '96.

MONTHLY ROSES, WINTERING THEM.

J. W. T., Pittsburg, Pa., writes: "I have some nice specimens of these that I wish to keep for next year. How shall I take care of them during the winter—leave them outside or put them in my cellar?"

Ans. By cutting them back considerably, and lifting them with good roots and planting them thickly in one or two boxes six or eight inches deep and keeping these in a cool but frost proof cellar—such as you would keep potatoes in—they should winter nicely. Lift them up to more light and air in early spring, and pot them singly or box them off a little further apart than they were in the winter boxes, and about the end of April plant them out of doors again. Or you may winter them outside in this way.

Before hard frost sets in cut back the plants a little just to enable you to handle them easier than you could were they left uncut and lay them flat on the ground, holding them in place with pegs or weights, and now spread over the whole bed and so as to completely bury the rose bushes from four to six inches deep, loam or sod. In very severe weather in winter so ne straw or leaves, or other littery stuff may be placed over the loam to help exclude frost; remove it, however, when the weather gets mild, for over-covering is apt to rot the plants it meant to save. In outdoor covering don't cover up too early in the fall nor uncover too early in spring. Be sure that the rose bed is so thoroughly well drained that no surface water can lie about it at anytime in winter. In gravelly or sandy soils it is far easier to winter somewhat tender roses than it is in clayey soils; and while sandy or free loam makes an excellent winter mulch, clay is poor covering. Sawdust makes a good mulch; put it on 6 to 10 inches deep over all and in a deeper mound over the crown of the plants. Sand and spent tan bark also make excellent mulching, so too have we found hard coal ashes. In the case of these roses we have found that manure is not a safe mulch, it is very well as a part protection, and a good forkful of litte y manure in about the crowns of roses saves them from wind, sunshine, and severe frost in winter. Spread in the rows between the rows we can put it on thick with safety. Tree leaves are a good covering too, that is, oak leaves are, and we can pile them on deep, but maple, linden, or other soft leaves are apt to get wet and weld themselves into a thick rotting wet mat which is often as much a menace as a safeguard to our plants.

Orchids.

ORCHIDS.

During this changeable fall weather watchfulness will be required with orchids that are pushing up their flower stalks; gradually give them a little artificial warmth, but above all things do not give them a very high temperature for any lengthened period. If possible, as near 70° during the day, and 58° to 60° at night with a fair amount of atmospheric moisture, and only watering at the root when plants are quite dry. In fact the plants should have been potted in the condition that they will become dry once in twenty-four hours; this does not mean that the plant such as cattleya, lalia, and cypripedium, should be watered by hose or pot every time it becomes in this dry condition, but it must be understood, that atmospheric moisture must always exist when you are using artificial heat. Our cattleya house gets now about two waterings per week directly applied by hose over leaves, potting material, and often times the flowers too in their early stage get a good bathing, and I have never found injury from this treatment; of course we always choose a sunny day when we can ventilate freely, so that they will soon become dry again. Our rule is to remove to a cooler show house plants when flower are fully out and fit for cutting; on those we are careful not to subject then to undue moisture. In the case of *C. Triane* (this being the one we grow in much larger quantity than the others) the plants are allowed to take a rest in this house for a few weeks at a temperature 55° ot to 60° and often much lower than this at night.

Cypripedium insigne will now be better in quality of flower if placed in a temperature of 65° or 70° till the flowers are fully expanded, and then if you so desire remove it to a cooler house for keeping. All the hothouse cypripediums should now have much of the summer shading removed and the plants spread out so as to give them a good airy space between the pots; wash the pots and remove all decaying leaves from the plants and carefully attend to the watering. *C. Lowii*, *C. Stonei* and such like varieties do not like too much water over their leaves especially in dull moist weather.

Keep a good lookout on your *Dendrobium Phalaenopsis* and after the flowers are cut and the plants have made good solid stems, remove them to a cooler and dryer house with a temperature of 55° to 60°; even a little cooler at night will not damage them. Keep them on the dry side during their rest and they will push with much more vigor than if kept at stove temperature during the resting season. *Vanda cœrulea* after flowering can be rested at 55° in a good airy place keeping it on the dry side for a couple of months during the heavy winter weather, but it must be carefully attended to as soon as February comes and the waterings and moisture can then be increased. Many of my plants are pushing very strong spikes for the second time this year and quite a few have two spikes each. *Cœloygnes* will now like a little light liquid once or twice a week, carefully washing off the foliage and bulbs with clean water from the hose after its use. Keep a good look out for snails. Branin which Paris green in mixed is a great destroyer of this pest.

WM. MATHEWS

Utica, N. Y., October 10, 1896.

The Fruit Garden.

NUT CULTURE.

Your notice in GARDENING of October 15 of the "Nut Culturist" reminds me of my pleasant correspondence in years past with its gifted and greatly lamented author, the late Andrew S. Fuller.

In the department of nut culture he was unquestionably the highest American authority. His modesty, however, and his persistent aim to publish only the results of *completed* experiments, delayed the publication of his work during his lifetime.

He used to speak with enthusiasm of his success in raising the English nut from seed supplied from a friend's garden in New Haven. He also had much faith in the possibility of obtaining new hybrids by crossing with our native hazel nut.

The subject of nut culture is one of special interest and importance to American cultivators for two reasons, first, because we have such a variety of native nuts, and second, because our vast stretch of territory and variety of climate and soil, makes possible the successful cultivation of every species of edible nut which finds its habitat in the temperate zone of both hemispheres.

During the last 40 years I have grown on Long Island the Madera nut and the pecan, three varieties of hickory nut, the black walnut and butternut, Spanish and Japan chestnut, also the large sweet Jersey chestnut, the chinquapin, and the beech nut. I am satisfied that much may be accomplished by careful selection of seed and judicious planting.

As Mr. Fuller says in one of his notes: "By gradually acclimating the southern nuts to endure a lower temperature than they have been accustomed to, the chances are very good for securing hardy and productive trees." This of course requires much time and patience and no one man's life is sufficient to reach a full measure of results, but the time will come when combined and persistent effort will tell, the end will richly pay for all the outlay, and thus add to the rich variety and value of our native fruits.

Who will take up the work where our lamented friend has left it and prove a worthy successor to Andrew S. Fuller in the interests of nut culture?

In the recent agricultural exhibit at the Fair of the American Institute, at Madison Square Garden, W. Parry, of New Jersey, showed a wonderful variety of nuts all raised on his grounds, and those interested in seeing how much can be done in this department of arboriculture did well to spend a half hour in examining his specimens. J. W. BARSTOW, M. D.

New York, Oct. 29, '96.

Vegetables.

THE VEGETABLE GARDEN.

At this season of the year most of the crops of the vegetable garden are past; those remaining will still need some attention.

Cabbages: Towards the end of the month, or before the next issue of GARDENING reaches its readers, these will require to be lifted and stored away for winter use. They may be kept in a cool cellar or inverted in beds three rows wide with two other rows on top of these. Cover at first with a little earth, as the weather grows colder add more, and finally, when this is frozen, finish off with a covering of sedge or marsh hay or some such material.

Celery will need earthing up as it grows. That intended for use before the holidays may be finished up, while what is wanted later needs to be only half bleached when putting away in trenches. The trenches for storing should be nearly the depth of the celery, giving room to raise the ground slightly on either side of the trench, so as to shed the water. Ten inches at the most is wide enough to dig the trenches, as too great a bulk of celery will cause it to heat and rot. When the trenches are full the celery may be covered with boards nailed A shape. As the weather grows colder, earth and other covering may be added. The nearer celery can be kept to the freezing point the longer it will stand; even if the tops are slightly frozen in the trenches it will not hurt. This should be the guide in adding to the covering. If it is too warm it will surely rot.

Lettuce plants intended for spring use should be transplanted into the cold frame two inches apart.

Parsnips should be lifted before the ground freezes up. They are much benefited by a little frost. A few may be stored in earth or sand in the cellar, the rest in a shallow pit outside where they can be got at when wanted.

Rhubarb, where there are facilities for forcing a few stools may be lifted towards the end of the month, and laid away in some sheltered place until wanted. Cover them with earth and any coarse rubbish, not to keep them from freezing, but so that they can be got at later. If a new



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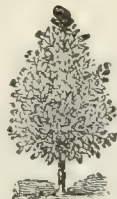
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bed is wanted now is a good time to plant it. Divide an old stool, leaving two or three eyes to each piece. Open a trench a foot deep, dig in plenty of good rotten manure and set the plants not less than three feet apart, four is better, and cover in with earth. When the ground freezes put on a good mulching of manure which can be dug in around the plants when they appear in spring.

Spinach: Keep the bed cultivated until frost. Have ready some covering, salt hay or sedge or other material which will be applied when severe weather approaches.

Turnips should now cover the ground. Pull before freezing weather.

CURRENTS, GOOSEBERRIES AND GRAPES may be increased by cuttings of this year's wood. Make them now, and set them in rows where they can stand for a year. Set them three or four inches apart, well down, and firm the ground each side of the rows.

Strawberries should be kept clean, and all late runners cut off when hoeing. Later, before applying their winter covering, give a top-dressing with rotten manure. It will wash into the ground during the winter, and will speak for itself later on.

P. F.
Market Gardener, New Rochelle, N. Y.,
October 10, 1896.

EARLY MUSHROOMS.

I wish you could see my mushroom bed it is in fine form it is just in one mass of small mushrooms, and it has only been spawned a month. This is very early for the mushrooms to come up, indeed I was quite surprised when I took the straw off this morning. I tried some experiments with it, all in the same bed which is 30 feet long by 4½ feet wide. I cased part of it with dry cow manure alone, and it is on this part that the mushrooms are best; next to this, used cow manure mixed with soil in equal parts, and then plain soil, in the soil alone mushrooms are very few coming yet. Do you think the cow manure has anything to do with the earliness of the crop. I should like to here from you on the subject, the bed was put in on the 3th of September and spawned on the 13th giving the mushrooms just a month to come up. [The dryish cow manure has had a most salutary effect upon the bed in fact so much did the old growers appreciate cow manure for mushrooms that it almost invariably formed a part of their bed, and to this day the makers of mushroom spawn regard it as indispensable.—[Ed.] DAVID FRASER.

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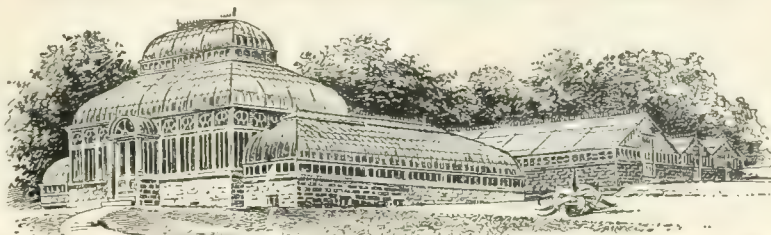
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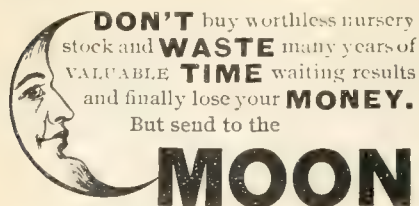
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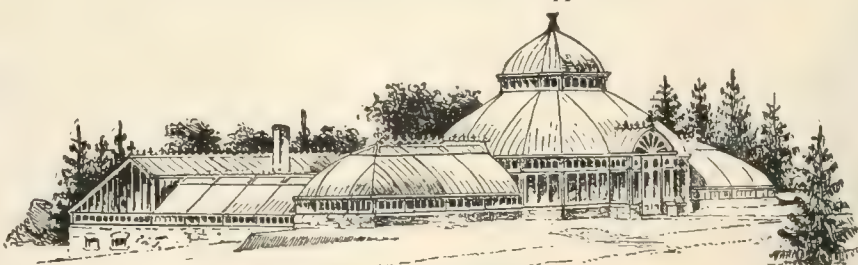
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No. 101.



CEDAR OF LEBANON.

Trees and Shrubs.

THE CEDAR OF LEBANON. (*Cedrus Libani*.)

I took pictures the other day of some notable trees at Flushing, Long Island, and send you copies of them. The tree we now illustrate is the Cedar of Lebanon.

It is 68 feet in height and at three feet up from the ground its girth is 14 feet 4 inches.

This tree was planted in one of the Flushing nurseries about 95 years ago and appears to be now in the prime of life. It is one of the several now standing in Flushing and shows better than the others, the peculiar characteristics which this cedar presents to the casual observer. These are a tabular top (only faintly indicated in the picture), and a foliage which ap-

pears to be arranged in horizontal layers or strata of different shades of color, producing a strikingly beautiful effect. The foliage resembles less the foliage of our native cedar than that of the larch, differing from the latter in that the clusters of needles are grouped more closely upon the twigs and branches, so that the tree loses the feathery appearance for which the larch is famous.

Until the Cedar of Lebanon is well advanced in years it may easily be mistaken

for the common spruce or hemlock, as the peculiarities are not usually developed at an early age.

I. B. G.

Flushing, N. Y.

The "Our Native Cedar" you refer to is probably the "red cedar" which is not a cedar at all but a juniper (*Juniperus Virginiana*). There are only three true cedars in the world, namely, the Mount Atlas cedar (*Cedrus Atlantica*), the Himalayan Deodar (*C. Deodara*), and the Cedar of Lebanon (*C. Libani*), and some excellent botanists insist that all three of them are forms of the same species.

SHRUBS FOR A SMALL TOWN LOT.

E. C., Petersburg, Va., sends us a plan of his garden, and asks us to recommend some small shrubs to plant on "each side of the front steps or side steps, no steps on the south side; from front steps to gate 18 feet, from side steps to gate 10 feet. What about Japanese maples—will they grow too big? Also arbor vitæ?

As regards what to plant and how to plant it, you must use your own judgment; we can only tell you what things are low growing and suitable for such limited area. Don't plant arbor vitæ; they aren't good enough. If you want evergreens, get some of the finer retinosporas, as *pisifera*, *squarrosa*, *filifera*, *plumosa*, or some of the yews, as *cuspidata repanda*, *stricta* or a tree box. But at the pathside we don't think you will have room enough for them. On the east and north, if sheltered from bleak winds, rhododendrons should thrive well, so will deciduous azaleas; if much exposed, plant *Rosa rugosa*. A clump or two of the common yucca would be pretty. Among flowering shrubs, *Spiræa callosa alba* and *Bumalda*; *Deutzia gracilis* and *parviflora*, *Daphne Mezereum* or others of such low stature should grow well there. By Japan maples we presume you mean varieties of *palmata* and *Japonica*, such as are sold in nurseries for their beautifully colored and much divided foliage. Yes, they are all right and very desirable; if they ever grow too big for the place you may conclude you have been in luck, and better still, no matter how big they are they are easy to transplant.

TREES AND SHRUBS.

The pruning may be done most anytime in winter, it consists of cutting out one or two branches where they rub together, sawing off broken branches close to the stem, shortening in shoots or branches that run out too far. It is a hard matter to tell living wood from dead now that the trees are leafless, so we don't bother about that unless we know the branches to be dead. The same with shrubs, also, we do a deal of thinning in their case, cut out the scraggy useless wood, and over crowding branches, and likewise the old flower spray wood, so as to give the younger shoots more room and light for next spring's work. If you planted out some trees this fall and they need a stout stake to support them against being tossed by wind or broken by animals, give them the stakes. A good ligature to use in tying is marline put through a piece of old rubber hose. In the case of rhododendrons and azaleas a heavy mulching of forest tree leaves help them wonderfully, indeed, it is the same with most evergreens, and a windbreak made of boards, brush, or corn thatched hurdles is a great protection to them. In the case of shrubby borders especially if several

years planted a heavy dressing of manure spread broadcast over them will be of great benefit to the shrubs. Arbor vitæ, yews, retinosporas, sephalotaxus, podocarpus, junipers and other evergreens that are likely to have their branches or bodies weighted down or spread apart by winter snows, should be tied together with marline or other stout cord in such a way that the cord cannot be seen from the outside and at the same time it shall be perfectly effective in keeping the branches together. In the case of young trees or shrubs, especially in clay land, see that the earth is hilled up against the stems somewhat so as to throw the water away from them; and no water should be allowed to rest on the plat in which the trees are growing.

JAPAN QUINCE—A FREAK.

I have this day, November 3, a Japanese quince in full bloom, also a few flowers on *Lonicera Henrota*. How is this for cold Iowa? [Bad. Blooming in the fall is caused by some severe check in summer, such as is caused by a hard drouth preceding copious rain, and is always to be dreaded, for it makes the subject an easier prey to the inclemency of winter than are those having firm, well-ripened shoots that had not started prematurely into growth. Ed.] But I write mainly about a freak shown by the Japan quince. On one of its stems, about three feet from the ground, a shoot starts which is a regular vine, entirely without thorns, and about 5 feet long. Its lower part has advent bud, same as on the regular plant. How can I propagate this shoot? I think it will be much easier to handle this than the regular plant.

C. T.

Davenport, Iowa.

By layering the shoot and making it into cuttings, then caring for these, or safer, graft it.

NATIVE KALMIA—AZALEA—HOLLY.

Why do not people plant more of the American laurel and the *Azalea nudiflora* and *viscosa*? Few foreign shrubs are equal to them in beauty, they are plentiful, easily procured, and bloom so full. Why are they neglected by so many? Also the American holly? Slow growing to be sure, but give it a soil similar to where it lives, plenty of leaf mould and a mulching when young and it is reliable.

Westbury, L. I.

ISAAC HICKS.

We are glad you have asked these questions for you are a nurseryman and know what you are talking about. Now let us get your head in chancery. When the people buy shrubbery for their gardens they want to get good sized; well-established, bushy plants that will flower the first year, to begin with, and every succeeding year they want these shrubs to keep on getting bigger, handsomer and more floriferous. Have you got in stock *Kalmia latifolia* (laurel) plants, say two feet high, full, bushy, and well rooted, of this sort, and if so, will you sell them at the average price of other shrubs, say 50 cents each? If you have not and won't, the answer is clear, good plants are too expensive and hard to get, amateurs don't want to turn nurserymen and grow their plants, they want them already grown. But if you will furnish plants as good as this and at this price then you are a missionary deserving of credit and encouragement; in fact we will give you a big order. Of course these shrubs are wild in the woods and amateurs can have them for the digging, and so on, all of

this is true, and nurserymen have the same privilege, still it is queer that they will grow Persian lilacs, Japanese spiræas, and hybrid roses to twice the size of these kalmias and sell them for half the price they charge for the laurels that they can go out into the woods and get for the digging. Besides, most amateurs prefer paying the nurseryman a fair price for a good shrub, than be bothered carrying it home from the woods let alone digging it up there. The two azaleas mentioned are capital shrubs but often of scraggy ungainly habit and they are slow to mend their shape. Small plants of the American holly do not appeal to the general public, they are so very slow growing and we have to wait so long before they begin bearing berries. At the same time we recommend it to our readers for they ought to have it. The European holly is not hardy north of Philadelphia.

A TREE ARCH.

I am sorry you think the idea of a tree arch over a gateway is not pretty, in fact puerile, for some years ago I was childish enough to make such an arch over the front gateway of a village residence and took much comfort in it; even the neighbors didn't know any better than to admire the effect. The lot was quite wide and deep, with house about in the center. Two young elms, Scotch and English, eight or nine feet high, were planted on the further side of each gate post and the little tops bent over, interlaced and tied together with stout twine. It was a pretty arch to begin with and a little pruning kept it in shape and increased its size and symmetry for several years, or as long as I lived there. I do not think "A. W. C." will make a serious mistake in forming such an arch.

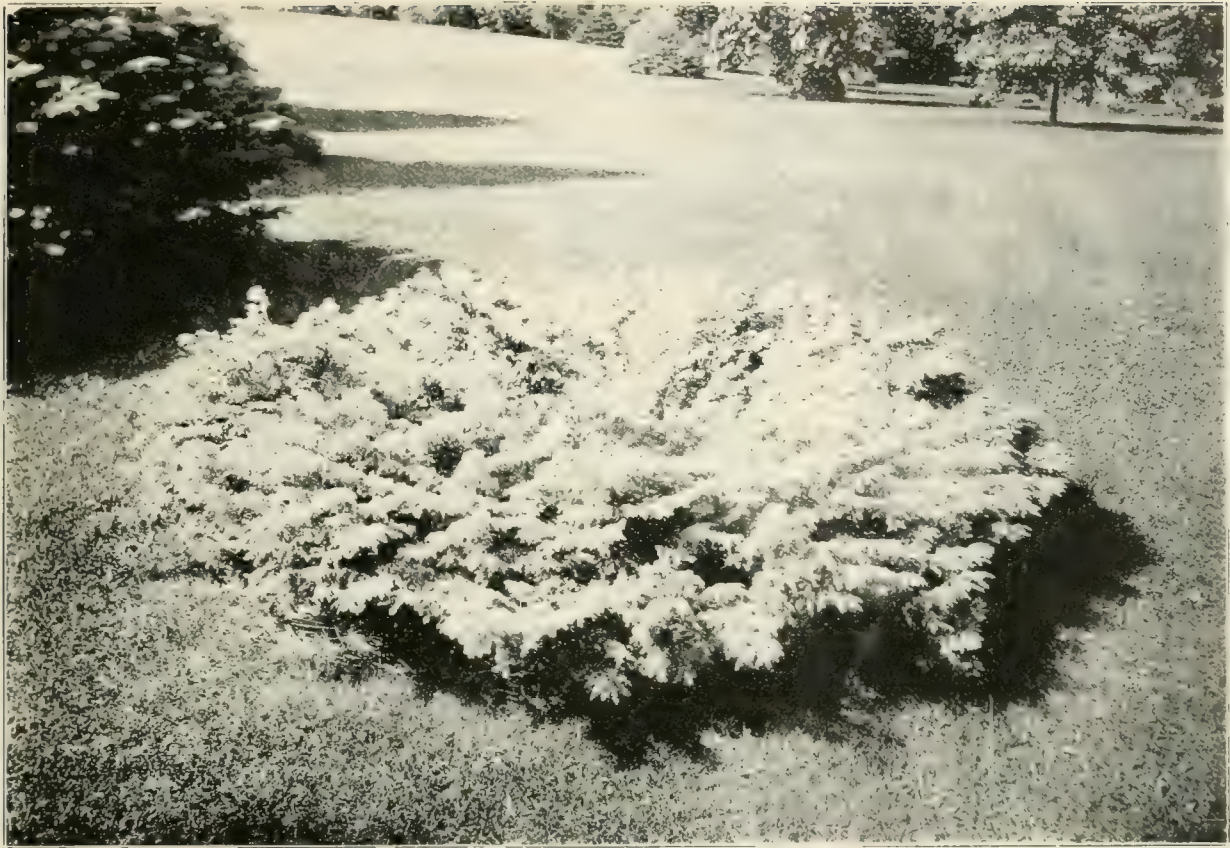
WM. H. COLEMAN.

Albany, N. Y., October 24, 1896.

The arched arbor of pin oaks at Dosoris see illustration in GARDENING [August 1, 1893, page 348. They are 24 feet apart across the road, and 30 feet asunder in the row, and are 19 years planted] and the arbor is the most perfect and beautiful thing of the kind in the country, and it is annually becoming fuller and better. The oaks were planted in opposite pairs and trained up straight to tall stakes, then a wide bow was made of long hickory saplings, and the oak tops tied down to it, and kept growing on in this way till they met and were joined to each other and became self-supporting, and to do this we had to keep the shoulders cut in, or the trees always persisted in an effort to rush up from the perpendicular. Still there was no use shutting our eyes to the fact that if these oaks were left to their full natural development from the beginning the same arch or arbor end would have been obtained before now by cutting in the inner branches up to as high as we wanted our arch, and letting the outer ones stay right down to the ground. Don't you think the effect would have been more pleasing and satisfying than that obtained by arching in the tops? We do.

DOUGLAS'S GOLDEN JUNIPER.

This is a gem among hardy evergreens. It is a yellow variegated variety of our common wild juniper (*Juniperus communis*) and was first brought to notice and disseminated by our esteemed friend Mr. Robert Douglas, of Waukegan, Illinois. This was about a dozen or so years ago. It was so good a shrub that for several years the demand for it was far in excess



DOUGLAS' GOLDEN JUNIPER AT DOSORIS.

of the supply, and even now it isn't plentiful. Our illustration engraved from a photograph of a plant on a lawn at Dosoris, gives one a fair idea of what kind of a plant it is. The habit is dense and spreading, the ends of the branches rising to a height of 18 or 24 inches above the ground level. In summer the color is bright golden yellow, but as winter approaches, this golden hue gradually merges into a metallic brown color. In summer it is bright and pretty, and in winter its brown tint is quite marked. It is an excellent subject to plant on rocky exposures or in sandy ground, but mark, it doesn't at all do better there than in good soil. The specimen shown you in the picture is about 14 feet across. In another part of the grounds near a fringe and mass of evergreen trees, we planted a large circular bed on a slope back from but in sight of a road running near by there, where the golden mat could be seen in passing the road. The effect is bright, good, and not at all obtrusive, and catches the eye of the passers. Other good points in its favor are that it is quite hardy and easily transplanted.

The Flower Garden.

MY GARDEN IN WINTER.

My garden is situated very near Lake Michigan, and is wind-swept during the winter and early spring months. It therefore becomes necessary to put our pets snugly to bed before the holidays. About the middle of October all the shrubbery and flower beds are gone over, neatly edged, well weeded, and all tops of the

perennials cut down and taken away. All labels are carefully examined, and firmly reset in the ground, while those hanging on trees or shrubs are looked after to see if they are not cutting into the limbs. All plants that are tardy in appearing above the ground in spring, such as the funkias and platycodons, have a strong wooden stake put at their sides, while all lilies have cane stakes put to mark them. This is done so that they will not be inadvertently disturbed next spring. Where constant weeding or other causes have lowered the soil somewhat, the bed is refilled and leveled up. Later on all lilies, considered tender such as *Krameri* and *Hanson* and the clematis in the shrubbery beds, have mounds of ashes—wood or coal—placed over them. All clematises around the porch are cut back to within one foot of the ground, laid down and covered with leaves, over which are placed boards to protect them from the melted snow swept from the porch. The early falling leaves are not worth much for covering as they rot too quickly and pack too closely. Oak leaves are the best.

Alstromeria aurautica has a box inverted over it filled with leaves and then strawy manure or any coarse litter placed over box and all. All half hardy evergreen plants such as *Acanthus latifolius*, *A. spinuosus* and *Yucca filamentosus*, which I find enjoys this treatment, and responds with finer flowers, are well mulched with manure and then have empty barrels or boxes placed over them. These packages should be large enough so that the foliage does not touch the wood, otherwise that part in contact often browns. *Magnolias* (Japanese dwarf), *Wiegels* (althas) *Deutzias* and

Itea Virginia and rose Mad Geo. Bruant are wrapped in straw.

Rosa wichuriana in a mass twelve feet in diameter has well rotted, finely pulverized manure scattered over it, and well worked in, and then covered with *Eulalia* grasses or evergreen boughs. Climbing roses grown to posts, such as *Prairie Queen*, *Crimson Rambler*, *Paul's Carmine Pillar Rose*, *Empress of China*, etc., are unloosened, coiled around the post on the ground, and covered with grasses or boughs. The *Seven Sisters*, against the wall, and *Ayshiri* ramblers on tree stumps have the long canes of the *Arundo donax* in the one case, and pea vines in the other put over them.

All trunks of young trees where exposed to the sun have a couple of laths or similar protection placed at their south side to prevent sun scald in winter which so often causes disfiguration of the bark. The golden spreading Juniper and the type also, when growing strongly often burns at the tips in winter. A temporary roof of light boards prevents it. All low growing evergreen perennials, like *Papaver orientalis*, *Heuchera sanguinea* and the candidum lilies, are covered with evergreen boughs or anything that will not mat down on them, but before doing so fine manure is worked in among them. The *Eulalias* are cut down to use in covering other plants; where the tops are not wanted, however, it is best to leave them uncut until spring, but I manure heavily in the fall and leave it there in the spring. Tar paper or boards, anything to keep out the water is placed over *Arundo donax* and hollyhocks and then manure. A piece of sod is put over *Lobelia cardinalis* to check its tendency to heave with the frost. Then a good coating of manure

is put over all shrubby beds, tree holes and the lawn.

The labels of the hybrid perpetual roses are taken up and tied to the plants, which are then bent over and fastened to some neighbor. The side of the bed is boxed in, the bed filled with dry leaves and then roofed with boards. Allowance for circulation of air above the leaves is provided. In the cutting grounds these roses are planted in rows, there they are bent over and covered with soil, in the same manner I cover my raspberries. Before doing so, each plant has a small tag of sheet lead with a number stamped on fastened to it by wire. These numbers are pencilled on the back of its summer labels which are put away and a memorandum also kept. *Azalea mollis*, rhododendrons, crape myrtle, and similar plants are wintered in boxes in the cellar.

The cannas are taken up with all the soil that will adhere to them and placed in any cellar that will keep potatoes safely. In their place I put tulips and hyacinths, which are through blooming before wanted for cannas. Beds containing narcissus, English and Spanish irises, or any early riser, are covered with half rotted oak leaves (saved from last winter's covering) which allows them to come up through it without bleaching. In the meantime the cold frames have been filled with foxgloves, Canterbury bells, and the Chimney campanulas, tritomas, montbretias, pansies, *Hypericum moserianum*. Seedling Iceland poppies, and any young perennials (unless unquestionably hardy), rooted cuttings of dianthus, snapdragons, pentstemons, carnations, etc. Then comes a deeper cold frame filled with the tender roses. Anemone coronaria and tender iris have their cold frames and one sash is filled with dry leaves, the glass and shelter put on and not opened until some fine day in February when it is planted with Ranunculus.

All unoccupied beds in the kitchen garden or elsewhere are ridged up to get the benefit of the winter's frost.

Nordman's silver fir, which is not happy here, newly planted or exposed evergreens not over hardy have solid board wind breaks placed around them. *Liquidambar styraciflua* loses its terminal buds here but I am getting a young specimen in good form by fastening small bunches of excelsior to the tips. Nursery trees and shrubs for next spring's planting have their roots pruned when received so as to become calloused before spring, and carefully heeled in in a slanting position in the most sheltered and best drained place at my command, and covered with straw or rough litter. W. C. EGAN.

Highland Park, near Chicago.

THE WILD GARDEN.

It is gratifying to see the increasing interest shown by your readers and correspondents in the fascinating subject of WILD GARDENING. This growing interest is, no doubt, largely due to the editorial encouragement supplied by the columns of your excellent paper. It is plain, also, that the same taste has taken root and is showing growth among the people at large. The amateurs and small cultivators. Owners of small holdings, lovers of little back-yard gardens, and all who are content with simple experiments in flower raising, are beginning to appreciate the treasures of the woods, and the pleasure of introducing a few rustic beauties to the company of their cultivated pets in the flower border, where both may flourish and shine together. Such a happy and easy combination of nature and art

is worth the while of every garden lover.

Wm. Robinson's "Wild Garden," which I read twenty years ago with much interest gave almost the first impulse to this style of gardening in England, and also to some extent in this country, and I am glad to see by a recent note in GARDENING that a new edition, enlarged and beautified, has been lately issued in London, and a copy very properly sent to your worthy self.

But Mr. Robinson's idea is not a new one. Long before his book gave form and emphasis to the plan of combining the garden plants with the wildings, there were few garden lovers of my acquaintance, who, fifty years ago practiced this pleasant habit, and who delighted to enrich their small flower beds with accessions from the wildwoods and meadows.

The intimacy thus established between the two classes, the rustic and the refined, proved an advantage to both. The rustics quickly felt the stimulus of improved soil and better care. They hastened to put on their better attire and often outstripped and outshone their more aristocratic neighbors.

At first, naturally, the contrast was broad, the old residents claimed precedence and seemed jealous of invasion, but gradually the lines of separation disappeared and the effect of the contact proved harmonious and charming.

Let me tell you some of my own early experience in this direction gathered from my boyhood's garden of sixty years ago.

I could not quite share my next door neighbor's preference for the unvarying round of annual seed sowing, the formal rows of mignonette and mulein pinks, of coreopsis and four o'clocks, of sweet basil and ragged edge sailor, nor for the prim edgings of box—the clump of southernwood and the border of chives or moss pinks. My own garden favorites were quite as much those of the woods and the pastures, and one after another of the rustics was brought home from botanizing or fishing excursions, and given a place in the garden, sometimes even crowding out the more aristocratic occupants.

The results soon became pleasing to the eye and even surprising. The wild violets doubled in size and improved in color. The exquisite "Dutchman's breeches" outstripped in beauty, its cultivated cousins adlumia and dielytra; the "Jack-in-the-pulpit" sent up his gigantic stems to overtop his calla relatives; the blood-roots and hepaticas and anemones were welcomed from the woods and showed their gratitude by a two weeks' earlier bloom than was their wild habit, and were conspicuous and gay even before the moss pink began to glow in the border. In the lily-of-the-valley patch I introduced the wild convallarias, the Solomon's seal of several species, and all thrived and bloom'd together in exquisite variety. The wild iris stood bravely by the side of her Persian and German sisters, never quite forgetting her inferiority, but greatly improved in size and color. The pyroleas and the actees from the damp pine woods raised their showy heads above the bed of periwinkles, the harebell took its place among the choice campanulas, the trilliums, came in with the May apple, crowding out some old cultivated residents of long standing and carpeting the shrubbery with their star-spangled foliage.

Wild shrubs also, as well as herbaceous plants were admitted to the new companionship. The wild spiræas respond readily to care and are quite as attractive

as some of the cultivated species. The clethra doubles the length of its sweet racemes under cultivation; the wild althea from the salt meadows soon forgets the briny soil in which it grew, and thrives equally and even better, in rich garden mould, and the wild senna and indigo are both easily grown and very attractive in the shrubbery, and the bayberry, under generous culture, becomes one of our finest evergreens; it is only rivalled by the southern pittosporum, which it much resembles. And so on, Mr. Editor, indefinitely, and this is only a single experience. How easy to enlarge, vary and improve with local material, and with a little individual taste and a willingness to depart from conventional rules—thus making variety a feature of gardening which shall be instructive as well as pleasing!

To invert this process, and to carry our garden flowers to the woods is another branch of wild gardening and the one to which Mr. Robinson chiefly devotes himself in his admirable book. Thus the woodland shrubbery is enriched with bulbs of all kinds, and lilies, campanulas, foxgloves and other garden favorites go out to adorn the edges of the forest thickets. It must be remembered that Mr. Robinson deals with English park grounds, and not with our more natural American landscape. Still the book is crammed with wise and practical suggestions and every page is full of interest. But I am encroaching on your space, and will only add my strong appeal that you will continue to encourage your many readers in trying to do a little wild gardening and to find out for themselves some of its instructive lessons, and its manifold charms.

J. M. BARSTOW, M. D.

New York, November 10, '96.

FLOWER GARDEN NOTES.

Queen of the Earlies Aster (white), sown about the last of February in the greenhouse and planted out early came into bloom the last of May; it was followed by Queen of the Market, then other varieties and open-air sowings, so that we have had asters in bloom in the garden ever since June 1 and the sowing of June 20 is still in good cutting condition, having withstood several frosts. The blight, so destructive to the midseason asters, appearing with us this year for the first, did not affect the earlier or later sowings.

A border of early flowering chrysanthemums eclipses in brilliancy all other garden displays of the year, and partly disbudded, presents some handsome though not very large individual flowers. They excite much admiration, make fine bouquets in vases, are in nearly all the colors and shades common to the chrysanthemum, and even if they should not prove hardy will be well worth growing as an annual. The seed was started early inside.

Barnard's Perpetual Lobelia has the finest flowers of any trailing kind we have yet seen; intense dark blue with large white eye. Goldelse is a very pretty low growing yellow leaved variety, has handsome flowers and makes a nice edging.

Pyrethrum Aureum "Moss" is another new, finely cut, golden-leaved edging plant, which for two years has shown no tendency to run to seed.

Salvia potens, from seed or roots, set rather closely because of the few flowers which open at once, will give perhaps the intensest mass of blue obtainable. It grows two or three feet high and is also available for cutting.

We have had no more satisfactory



CHRYSANTHEMUMS AS WINDOW PLANTS. [SEE PAGE 72]

flower in the garden than a bed of extra early Parisian wall flowers. They were started inside about the last of February and planted out early, have been in constant flower since the last of May and they still are growing and floriferous as ever; the flower sprays have always been cut as soon as ready. It perfumes the garden for a considerable distance and has been very much admired when cut.

Carnations, Vienna, Grenadin, Mixed Border, Marguerites and some greenhouse perennials have again given us more than five months' supply from the open ground. Plainfield, N. J. E. R.

GENTIAN-PRIMULA-STOCKS.

Is it known whether the fringed gentian, *Gentiana crinita*, is an annual or biennial? Botanical treatises, as far as seen, are silent on that point. Can it be flowered in gardens, and if so, how?

Primula, corpusoides, Japonica and *rosea* have all failed to germinate, both when sown in cold frame in fall and in pans in January; other primulas, as *auricula, denticulata, elatior* and *vulgaris*, sowed beside them at same time having germinated well. Can you tell me how to get the former class from seed.

I have little plants of various stocks and wall flowers in cold frames; will they need more than a sash covering to winter safely? INQUIRER.

Gentiana crinita if raised from seed in fall blooms next fall, and in this way acts as an annual; if the seed does not germinate

until spring it may not bloom till the year following, when it acts as a biennial. *Houstonia coerulea* (blueets), *Lobelia cardinalis* (cardinal flower), and several other common plants behave in much the same way. Yes, it can be raised from seed, grown and bloomed in the garden, but it is a very difficult matter and this is why we never see it in cultivation. But if you have a clear, mossy, bog garden and scatter newly ripened seeds over the moss in November, the chances are that same may germinate and a few plants live on and bloom. In fact gentians of any kind are difficult to get up into flowering-sized plants from seed; still seed of many of the ranker herbaceous sorts germinate freely enough. We know of no good reason why seeds of *Primula cortusoides*, if fresh, shouldn't germinate; we have always grown them without any trouble. *Cortusoides amana*, or *Sieboldii* has given us some bother at times though. With *Japonica* and *rosea* it is different, though. If you have old plants and they blossom and ripen seed, and the seed drops on the ground, seedlings will spring up there in myriads; let the seed get a few months old and dry before sowing and it does not germinate readily, in fact, often not at all. Try to get newly ripened seed.

Yes. The wallflowers might pull through all right, but the stocks are apt to suffer. A warm aspect, shelter from north and northwest winds, a frame-bed perfectly free from surface water, and the frame well banked around with earth, ashes, leaves or manure, even with only

a sash for top covering is a great shelter; it is safer, however, to add a dry straw mat and thin wooden shutter over it.

THE FLOWER GARDEN.

The beds have been emptied of their summer bedding plants and filled with hyacinths, tulips, narcissus, crocus, scillas, etc., and the beds all smoothed over with the rake. As soon as there comes a crust of frost hard enough to bear a horse and cart, we will haul a lot of fine manure and cover the beds a few inches deep. This can stay on in spring or be removed, just as we elect. For neatness sake we have cut over the phloxes, larkspur and other herbaceous plants of that kind and spread a coating of half rotted strawy manure over them; all of our fall-planted perennials have been treated in this way even in nursery beds. The evergreen plants as statice, armeria, pansies, etc., have some peat-brush laid over them, then a sprinkling of rough material as cut down stems of *Arundo Donax* or of eulalia grass spread lightly over the brush, to save them from wind, warm sunshine, and in a measure heaving by frost. Over the arundo, eulalia, mistflower, and other barely hardy plants we put a heavy coating of strawy manure, and we give *Hypericum Moserianum* a good dressing. While the last named may be hardy enough under certain conditions, it is too good a plant to take any risks with. Over lily of the valley, and over and between well established perennials a heavy dressing of rotten manure put on now, and left there till spring or altogether, strengthens them greatly. If you leave the tritomas in the ground over winter be sure that the surface drainage is perfect, then gather the leaves of each plant together into a knot and fill up between the plants with a foot deep of tree leaves, and over that spread some litter or branches. Auratum and other Japan lilies are hardy enough may be, but we strongly urge that a heavy mulching over them is advisable, it does them much good. We have planted a lot of foxgloves and other hardy plants in the ravines and open woods, and are now mulching them with old aster, goldenrod, and other plants mown down in the woods to clean up things. This covering is light, and should answer the purpose very nicely.

A LIST OF HARDY PERENNIALS.

Will the editor be kind enough to send me a list of hardy herbaceous plants that will bloom each month from early spring till late autumn. H. T. T.

Montclair, N. J.

All hardy perennials bloom in that time, hence you can appreciate the size of your question. But we will name a few: In early spring we have *Arabis albidula*, *Alyssum saxatile*, moss pink and two other phloxes, spring adonis, purple corydalis, Virginia lungwort, doronicums, epimedium, orobus, spring iris, lily of the valley, trilliums, columbines, bellworts, bellflowers, coreopsis, perennial candytuft, the great host of bulbous plants as narcissus, tulips, etc. Then we have hardy pinks, pyrethrum, fraxinella, baptisias, peonies, and the host of lilies, larkspur, monkshood, clematis, and a hundred others that bloom in summer. For later work we have swamp rose mallow, specoosum and Wallace lilies, white day lilies, orange asclepias, Japan anemones, gaillardias, baltonias, *Pyrethrum uliginosum*, *Eupatorium ageratoides*, torch lilies, mountain fleecy, sunflowers as *Orgyalis* and *Maximilianus*,

golden rods, asters, and the like. Get a florist's catalogue of hardy perennials and it will give you a good idea of the season of the flower.

COMING CANNAS.

I paid \$2 a piece for Crozy's new cannas for 1896, and among them all I have not found one that is good enough to increase for further use. But the fool and his money soon part, and year after year we pour our hard earned pennies into the bottomless pockets of European florists. Among the American raised new varieties to be sent out next year we believe you will find something worth growing. The best are as follows:

DUCHESS OF MARLBOROUGH.—Foliage 3 feet by 1, flowers large, pink, trusses 12 inches long, many flowers.

DUKE OF MARLBOROUGH.—Semi-dwarf, fine truss, of a very dark color among cannas, a crimson maroon.

MAIDEN'S BLUSH.—A delicate rosy flesh with deeper color towards center of flower.

LORRAINE.—A surprise, flowers pink, broadly edged with sulphur yellow shading white; it is fine.

SUNSET.—Center of flower brilliant scarlet flaming and shading into yellow.

BRILLIANT.—Three upper segments of flower are a pure canary yellow without a spot; the lower segment and stamen are bright scarlet.

GLORIOSA.—Like Queen Charlotte, but has larger trusses and brighter color; is never over, 18 inches in height, of very uniform growth.

CALIFORNIA.—Orange gold; the largest flower, largest spike of that color.

TRIUMPH.—Pure orangescarlet overlaid with gold immense compact truss and large flowers.

CHAMPION.—Bright crimson, the largest flower next to Austria and a robust grower.

PHILADELPHIA.

NOTES ON NEW FLOWERS.

DWARF STRIPED FRENCH MARIGOLD, ELECTRIC LIGHT.—This is one of the best of the French marigolds, the plants being dwarf and compact, the light yellow stripes on a maroon ground making a striking contrast.

ASTER, GIANT COMET, THE BRIDE.—This is perhaps the finest of the Comet asters. The flowers are very large, white at first becoming tinted with rose as they fade. The centers are usually filled with a mass of long curved tubular florets.

GIANT COMET ASTER, SULPHUR YELLOW.—The flowers of this are good, but the color is a light straw instead of yellow.

ASTER SURPRISE.—This variety was evidently sent out too soon and needs further selection. Not more than one in fifty comes true to the description.

ASTER, PRINCESS ROSALIND.—Flowers very double and imbricated to the center, of a fine rose color and one of the best varieties of the small flowered classes, the plants having the same free flowering habit as the White Princess or Snowball.

JAPANESE ASTERS.—No flowers of any variety of aster surpass these in size except Semple's or Vick's Branching. The petals are very long and tubular reminding one of some of the Japanese chrysanthemums of the Lilian Bird type.

ASTER, PÆONY PERFECTION, VERMILION SCARLET.—This is the brightest colored variety I have ever seen, a brilliant crimson.

ASTER, DWARF CHRYSANTHEMUM, TERRA COTTA.—An entirely new color in aster, a terra cotta brown and a desirable addition on this account.

COSMOS, YELLOW.—This ought to prove

one of the best of annuals for a bed of yellow. The foliage is very finely divided the plants from seed sown in April were a mass of bloom from July to October. It grows about 18 inches tall, of good habit, and flowers, which are about one and one-half inches across, are a good bright clear yellow. Sun, wind and rain have no bad effect on it. [Don't you mean *Bidens* and not cosmos? You know they got very much mixed up last year.—Ed.]

PHYSALIS FRANCHETI.—This new ornamental plant from Japan promises to be of considerable value for decorative purposes. Introduced by way of England England it will probably be generally catalogued by American seedsmen the coming season. Plants from seeds sown early in March, made a rapid growth and many branches 15 to 20 inches in length, and form many curious inflated calyces two to three inches in diameter enclosing fruits the size of large cherries. These calyces are at first green but during the last of August turn to a brilliant orangescarlet, the enclosed fruits also turning to the same color. The calyces are quite tough and keep their color well when dried and will be very useful for winter decoration. The foliage stands a hard frost without injury and the roots are said to be hardy in England. If grown in pots it would make a fine winter plant.

Pansy Park, Mass. L. W. GOODELL.

HOW WE GROW LILIES.

We grow many hundreds of lilies in great variety, and find that it pays us to be careful in planting and in giving them the best soil obtainable. October and November are the best months in which to plant them (excepting *L. candidum*) which should be planted in August) although they can be planted any time through the winter, till April if the ground is open and dry. We grow all of our lilies in clumps, say ten to twenty bulbs in a clump, and in this way they are seen at their best. We dig out the hole large enough to hold all the bulbs, a foot deep, if the soil is poor we cart it away and fill in with old rotted sods; in the bottom of the hole we put some very old manure and dig it having the hole about six inches deep when finished, a thin layer of sand is then put in and the bulbs are set on this, each bulb is then covered with sand and the hole filled in. The bulbs seem to like this coating of sand as they start away nicely in it; another thing they are not so liable to decay as the sand keeps any decayed matter that may be in the soil away from the bulbs, and one of the most important points to observe in lily culture is not to have the bulbs rest on any manure when planting as it is apt to rot them.

In planting the bulbs they should be put far enough apart so that they will not need lifting in four to six years. They increase very fast. Some of the speciosum lilies here that were planted four years ago, three bulbs to a clump, have 30 to 35 strong flowering canes now, and are growing stronger every year. Lilies like plenty of water in their growing season and this should be seen to. When you see the leaves at the bottom of the cane turning yellow, you may be sure the plants are dry at the roots. We always keep a mulching of old manure on them all summer, this helps to retain the moisture as well as to feed them. The mulching is put on in the fall and left on, we do not take it off in the spring.

Lilies can be planted in a great many places where other plants would not thrive and they take up very little room when once planted; for planting amongst

early summer blooming plants nothing is better. If the H. P. roses are planted in an exposed part of the garden a few lilies would help to keep the spot gay after the roses were past flowering, the same can be said of the rhododendron bed. We have had all of our Japan iris lifted and divided up and when we reset them we planted a lot of *auratum* and *Speciosum Melpomene* lilies amongst them, this will keep the garden gay after the irises are past and will do them no harm. Lilies can also be grown in pots very successfully and will well repay any little extra trouble that may be given them. At this season of the year they may be potted up and plunged in a frame or pit the largest bulbs should be put in a 9 to a 12-inch pot 3 bulbs to a pot and the smaller ones into smaller pots. They are easily managed in this way and when in flower you can arrange them in any part of the garden you want to or use them for house decoration. They can be brought out of the frame in early spring and started in a cool greenhouse if wanted early, or left in the frame to start; they will be a few weeks earlier than the ones planted in the garden. They will take plenty of liquid manure when growing and after they are through flowering they can be plunged out in the garden to ripen the bulbs and then be repotted in the fall again.

Insects do not trouble lilies but the lily disease is sometimes troublesome, the lilies most affected with it are *candidum* and *excelsum*. After trying several remedies we at last found one that was a preventive of the disease. Carbonate of copper one ounce; ammonia (one half to one quart) enough to dissolve it, for use dilute with nine gallons of water; this may be kept in corked bottles and used as needed. We tried this remedy the past summer and found it very effective. *Candidum* lilies left unsprayed had the disease very bad while the ones that were sprayed were quite clean. Lilies when received should be planted as soon as possible as they soon shrivel up if exposed to the air too long. Some of the easiest to sow, and showiest in flower are *auratum* in variety, *speciosum* in variety, *Brownii*, *candidum*, *elegans* in variety, *Hansonii*, *Martagon*, *superbum*, *Wallace* and *Trigium* in variety.

Mahwah, N. J. DAVID FRASER,

PHLOXES—TO HIDE THEIR STEMS.

Wanted, a good, shining green, that could be planted in front of the hardy perennial phloxes as a shield to the lower part, the effect would be much improved. Can you suggest some such perennial, which would probably be in bloom and attractive when the phlox is not?

Nova Scotia. A. R. C.

The late blooming phloxes vary so much in type, that is in barrenness or fullness of foliage, shortness or tallness of habit, and branchiness or scimpiness of stem, that we generally arrange to plant the taller ones and scimpy ones in the middle and the shorter and leafier ones on the outside. But you want a plant which in freshness and fullness shall make a good border to a bed of phloxes in general, and hide their naked stems, and at the same time always be good looking itself. We haven't many fitted for this work. *Sedum spectabile*, *Funkia ovata* and *F. grandiflora*, *Hemerocallis Dumortieri* and *H. graminifolia*, *Asclepias tuberosa*, *fraxinella*, and some such plants might answer. And in the way of shrubs a border of tree ivy or *Spiraea bumalda* might be available; or *Pennisetum longistylum* as a tender or annual grass.



A CORNER IN AN AMATEUR'S GREENHOUSE.

WINTERING AURICULAS.—M. D. writes: "I have a few pots both of yearling and seedling auriculas; what is the best treatment for them from this time forward?"

As we have several hundred of much the same thing at Schenley Park we will tell you what we are doing with them. We raised them from seed last spring, and grew them planted out in a frame all summer, the frame was open but slightly shaded by a nearby apple tree. In September we lifted the strongest and potted them, two or several in each vessel, in pots or pans for blooming in the greenhouse in late winter and spring. These pots shall be plunged to their brims in a well-drained cold frame and we shall try by banking around it and covering it with sashes and shutters to keep hard frost out of it, not to save the plants from the cold, but to save the pots from bursting by frost. Ventilate freely in favorable weather. The plants left in the frame were planted up a little closer together to save room, and we shall cover the frame in winter with sash, and may be a shutter to exclude wind, storms and warm sunshine in severe weather. Although auriculas are hardy enough in their native alpine home, they often suffer here in winter on account of our strong light in frosty weather, and exposure to searing winds.

The Greenhouse.

AN AMATEUR'S GREENHOUSE.

Here is a view in an amateur's small greenhouse. The photograph from which

our illustration was engraved was sent to us by a subscriber in Mahoning. It shows a miscellaneous collection of plants—ferns, palms, dracenas, orchids, etc., grouped at the end of the central bench. In just such a little greenhouse as this is, hundreds of active business men of the country find recreation and rest before and after city business hours. Growing plants is a pleasure to them, and they usually succeed in obtaining excellent results with their flowers. Not only do the men folks find happiness in a little greenhouse, but the ladies of the family take a special pride and pleasure in it, and if there is an invalid in the family the greenhouse is sure to be her special delight. You can grow as good plants in a plain every-day little greenhouse as in an elaborately built and expensive one, and now-a-days when you can buy every bit of the framework ready made at the factory, and any jobbing carpenter can put it together, the expense is very moderate. If you haven't got one, put one up and enjoy life.

THE GREENHOUSE.

For an ordinary greenhouse a safe night temperature is 50°, and 60° by day, or with sunheat a few degrees more. In such a house as this is, bouvardias, carnations, stevias, primulas, cyclamens, begonias, azaleas, genistas, callas, and the like, and many orchids can be grown to perfection. In a warm greenhouse a night temperature of 60° with 10° to 15° higher by day is about right. In a house of this sort palms, ficus, dracenas, crotons, marantas, anthuriums, nepenthes, and such orchids as vandas and phalaenopsis thrive to perfection. But if a person has only one greenhouse he can grow most all plants mentioned above in it by

arranging the cool-loving ones at the cool end of the house, and the heat-loving ones at the warm end of it. In the winter far less shading is necessary than in summer; carnations and roses, don't need any, but Chinese primroses, cinerarias, calceolarias and cyclamen, are benefited by a thin shade; in the warm house while crotons, ficus and some other plants would luxuriate in open sunshine, it is seldom convenient to separate them from those that do need a little shade, and as they thrive well enough in slight shade, it is well to have the house thinly shaded, then there will be no fear of palms, ferns, mosses, begonias and such like. Callas, roses, cinerarias and other plants in vigorous growth must be watered copiously, so must palms, anthuriums, and other evergreen vigorous stock, but the general tendency at this time of year is to somewhat lessen the water supply at the root, consistent with the lower temperature and less incitement to growth, but always keep up the moistness of the atmosphere, and the more artificial heating is used the more water we should spill about the floor, benches and walls of our greenhouses to moisten the air. Down with insect vermin. Keep the hose or syringe at work against red spider, with a little brush and whale oil soap remove scale and mealy bugs, and use tobacco smoke or tobacco vapor to kill thrips and aphides. We have lots of patent insecticides each one better than the other; choose for yourself and follow the instructions given with them, except in the strength of the mixture; to begin with try it at one-half strength and if that doesn't hurt, at three-fourths. Fumigating with tobacco is exceedingly disagreeable work, and if any one tells you that you can "smoke" a greenhouse without that smoke pene- rating into an adjoining room opening from the greenhouse; or that you can put plants into a cupboard in the cellar and "smoke" them there without the smoke coming out into the cellar, or that you can smoke them under an improvised tent made of a wet sheet without the smoke escaping from there, don't you believe one word of it. We use fresh stems in large quantity on and under the benches, and on the heating pipes, and sprinkle them with water once or twice a day to cause them to exhale that pungent vapor which is so fatal to thrips and greenfly, but, mark, perfectly harmless to scale, mealy bugs and red spider.

A BOYS' GREENHOUSE.

By an appropriation of the Michigan legislature of 1895 the Industrial School for boys at Lansing was enabled to erect a greenhouse, and engage a gardener to teach the boys. We endeavor to be practical in our work, leaving theory to be acquired in later life. Our first house was erected in the fall of 1885, but was not used until the next spring. It is intended as a store house (dimensions 50x20 feet) but for want of a better stock is now used for bedding plants, begonias, chrysanthemums, etc. In July of this year, we erected a 50x20 feet short span to the south, rose house, and also a work shop with bulb cellar and loft. The roses were planted August 1, and consist of Meteor, Beauty, Bridesmaid, Mermet and Perle. They are doing very nicely and we are cutting some superb Meteors. We like the short span to the south first rate, but can talk better next spring of course. The boys do all the work and the way they learn and the amount of interest they take in horticulture and botany does one's heart good. We hope to have

a vegetable house soon which will also accommodate violets, carnations, chrysanthemums, etc. We also expect to start a wild garden next summer and to put out more and better flower beds which will make our grounds quite attractive. For the short time the enterprise has been running it has been a source of great pleasure and we think we may add, profit to the institution. GARDENING is our inspiration and we wish it all possible success. ONE OF THE BOYS.

Good. We wish every industrial school had a garden and a greenhouse too for the use of the boys, yes, and the girls as well. No, we don't wish to make you all florists and gardeners and nurserymen, for you all will not have the aptitude or inclination for such work. But it will make you better boys, manlier men, and more refined citizens. Take a walk through your native towns and note the prettiest and nicest kept gardens there, they probably belong to machinists, carpenters, or railway men, and you will generally find their owners are your most exemplary people. Likely it is the good wife that is the gardener, bless her, and the influence of that woman is potent on every member of her family and every neighbor. Boys, keep a diary and stick to it. Not only make daily entries of what is done every day, and why, and what is in bloom, but also under separate headings make separate entries, for instance under the heading of roses, enter everything you observe about roses, as you observe it, and so on.

You talk about increasing the number of your flower beds, now be careful, many flower beds are bad taste. Let us suggest that you get together a large variety of plants, say two or three of a kind of all the popular shrubs so that you can become acquainted with them and know them; also popular hardy perennials, bulbous plants, annuals, hardy roses, vines of many kinds and the like, and get them all properly named so that you cannot mistake or forget them. Your wild garden is an excellent idea, keep it up. In this issue, page 86, Dr. Barstow one of the most eminent gentlemen in New York gives us his opinion, born of 60 years' practice of wild gardening.

GOLD FRAMES.

These are used to protect somewhat tender plants over winter from severe cold; these plants may be cut-down chrysanthemums to be kept over till spring, potted bulbs to be kept under a heavy coating of loam or ashes, to be get-at-able when needed; daisies, polyanthus, pansies, Canterbury bells, forget-me-nots, crown anemones and the like, which will be transplanted to out-door beds in spring; and pansies, violets, forget-me-nots, lily of the valley, primroses, anemones, ranunculuses for winter or spring blooming in the frames. The frames should be on perfectly dry ground, and where there would be no possibility of rain or melted snow lodging in pools about them, and especially should they be dry on the bottom inside. A bank of coal ashes or sandy earth packed up against the sides of the frame on the outside shuts out the cold and throws off the wet; then if there is a heavy bank of tree leaves or strawy manure banked against them to the top, and a board laid flat on top of this covering, it will keep all snug and warm. Wet or rotted manure makes a poor bank. Well glazed sashes should be used to cover the frames and as an extra protection straw mats should be placed

over them, then light wooden shutters over the mats. If you haven't mats, hay, straw, old carpets or anything of that sort will answer. In fact where it is simply a case of keeping the plants over winter, for instance, chrysanthemums, pentstemons, montbretias, multiflorus sunflowers, pansies, daisies and the like for bedding out again in spring, some dry oak leaves spread loosely over the plants in the frame are protection enough under the sashes, but be very careful to ventilate freely in sunny weather to keep down warmth and in this way not excite growth. As regards violets, pansies, daisies, forget-me-nots, lily of the valley, anemones, ranunculuses, narcissus and the like that we grow in frames to induce them to flower in winter and earlier than usual in spring, we must keep them snug and warm, and endeavor by much covering at night over the sashes to exclude frost altogether; be also very particular to take advantage of sunshine and mild weather.

HIMALAYAN RHODODENDRONS are tender sorts requiring cool greenhouse treatment, but they are of extraordinary beauty, and not at all hard to grow. In the more refined collections of greenhouse plants in this country they are finding a place, and deservedly too, for we want variety. We want to get something more than cinerarias, primroses, Dutch bulbs, and other every day material, there is room for all. But we were grieved the other day to hear a prominent gardener, whose employer had recently brought some of these rhododendrons, speak disparagingly of them.

Chrysanthemums.

CHRYSANTHEMUMS AS WINDOW PLANTS.

The illustration, page 69, is a picture of my window filled with chrysanthemums. I understood that the blooms are not up to a florist's standpoint, but it may prove of interest to amateurs, who have to



A WHITE-FLOWERED CATTLEYA. (*Cattleya Gaskelliana alba*.)

grow them under similar conditions to mine. These were grown outside in summer in pots without special care except to repot them as needed till it was about time for frost, when they were placed in the window as shown, where they have bloomed nicely, and have elicited much admiration from passers by.

The varieties are J. H. Troy, the tall one at the back of the center window, Nemesis the one at the right and Mrs. M. R. Parker at the left in front of J. H. Troy which stands almost five feet tall and contains 89 blooms of snowy whiteness; at the two lower corners of this center window are two plants of Miss M. M. Johnson whose rich yellow blooms show too dark to be very distinct. The one at the right hand in small window is Dean Hole not sufficiently developed then, but fine now. At the left hand window is a plant each of Jeannie Falconer and Mrs. E. G. Hill, and some smaller plants are placed along the front at the bottom of the center window. W. O. CLARK.

Chillicothe, Mo.

Orchids.

A WHITE-FLOWERED ORCHID.

(*Cattleya Gaskelliana alba*.)

Orchids are the aristocrats among flowers and white-flowered orchids are regarded as the fairest of the race. Among the grandest of all are the cattleyas, and the white flowered cattleyas are the gems of the genus. Our illustration, engraved from a photograph taken at Dosoris last summer, shows one of the whitest, most perfect and beautiful white cattleyas we have ever seen. A plant of this sort is quite valuable, but we came to have it quite accidentally. A gentleman, a naturalist, going to Brazil wished to send home some orchids to whoever would buy them, and Mr. Dana took a dozen or two. They were mostly *Cattleya gaskelliana* and when they bloomed this white one was one of them. It is just as healthy and easy to grow as any other cattleya.



CYMBIDIUM LOWIANUM

There are also white-flowered varieties of many other species of *Cattleya*, and all are precious.

CYMBIDIUM LOWIANUM.

Eleven years ago among other things we got a small plant of this from England, it had just been imported from its native wilds in Burmah. When we got the plant we shook it out of the compost in which it had been potted, washed the roots clean, and repotted it into fresh compost which consisted of chopped fern root and broken pots. The fern root from the woods is all the peat we use for orchids here. As the plant filled its pot with roots I repotted it into a larger one, being careful not to injure the roots, and it has flowered freely every year since we got it. When photographed it was growing in a 15-inch pot and had 14 flower spikes, but since that photograph was taken it has been in blossom again; it had 18 flower spikes, and as many as 26 blooms on some of them. The plant is grown in a greenhouse kept at 50° to 55° at night, and it is liberally watered during its growing season, and even when at rest in winter it is not allowed to get quite dry; when in vigorous growth we give it a little liquid manure as a stimulant.

I crossed *C. Lowianum* with pollen of *C. eburneum* in the spring of 1892, and obtained ripe seed which I sowed in January 1893. In two months three seedlings came up, and two of these are now showing flower spikes; and to-day (October 12, 1896) there is a seedling from the same sowing just coming up through the moss on the pots in which they were sown.

From *Cattleya Bowringiana*, and *C. labiata*, also *Dendrobium formosum*

giganteum, we are getting some fine flowers for cutting, they also render the greenhouse quite gay. Some of the plants of *D. formosum giganteum* are now flowering here for the twelfth consecutive season, and they are vigorous enough to indicate that they will bloom for many years more. Among the cypripediums in bloom are several hybrids that were raised here and flowered before, and others that are now blooming for the first time. The deciduous calanthes are blooming nicely; the larger bulbs are mostly bearing two spikes apiece. To get fine flowers one must have fine bulbs.

GEORGE MCWILLIAM.

Whitinsville, Mass., October 12, 1896.

A YEAR'S CATTLEYAS.

Cattleya Trianae is at its best in December, January and February; *C. Schroderae* runs through March; *C. Mossiae* although most beautiful in April and May will run well into summer; *C. Mendelii* is gayest from May to midsummer, and is succeeded by *C. gaskelliana*; after that comes *C. gigas* and *C. Warneri*, and *C. Harrisoniae*, and for the late summer and autumn months *C. labiata* is our mainstay. Now all of these are of the easiest possible cultivation, showy and beautiful, and any amateur who grows orchids at all can grow them successfully.

A. D.

ORCHIDS.

Calanthes, *Cattleya Percivalliana*, and *C. Trianae*, *Dendrobium formosum giganteum*, *D. Phalaenopsis*, *Cypripedium insigne*, and a good many other orchids are now making a beautiful display, and how lovely they are! Among the tens of thousands of greenhouse plants grown at Schenley Park the orchids are the most admired, and this is not by the connoisseur

alone, but by the common uninitiated people. Be sure you have a good lot of potting material, say fern root and live sphagnum moss on hand. Turn out the fern root (or peat as we call it) and let it dry, this allows the earthy material to be easily shaken out of it; this earthy stuff becomes pasty, and it holds water and is apt to sour; the best peat is free from it. But we must keep the moss alive and green, as dead or rotted orchid roots don't take as kindly to it or live in it as well as they do in fresh green moss. Spread it out in a cold shed and keep it moist. Don't let dendrodiums or other orchids at rest shrivel for want of water.

MIMICAL ORCHIDS.

The fox bush orchid is *Aerides Fieldingii*; the goat orchid, *Masdevallia chimera*, the parson in the pulpit orchid, *Oncidium dasystyle*; the cradle orchid, *Anguloa Clowesii*; the jewel orchid, *Anartochillus petala*; the moon orchid, *Aspasia lunata*; the dandy orchid, *Catasetum scurra*; the sad orchid, *Cirrhaea triste*; the bottle orchid, *Pleione Lagernaria*; the swan orchid, *Cynoches chlo-rochilon*; the bull's mouth orchid, *Chysis aurea*; the old man orchid, *Dendrobium senile*; lily of the valley orchid, *Eria convallarioides*; the Javan star orchid, *Eria stellata*; the Punch and Judy orchid, *Gongora atropurpurea*, and the butterfly orchid, *Oncidium Kramerii*.

A. D.

VANDA CERULEA ALBA is a white flowered form; and it opens blue and soon changes to almost pure white, more's the pity. *Vanda caerulea* is the best blue-flowered orchid in cultivation, and blue is very rare among orchids. Of white flowered orchids we have a host, and don't need this intruder; keep to the blue, and the bluer the better.

GARDENING

WILLIAM FALCONER, Editor.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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CLEMATIS PANICULATA.—S. M. S., Ty-lerville, Conn., asks: "How far apart should I plant this clematis to cover a picket fence? Where is a good place to get the vines?" *Ans.* If your ground is real good plant them four feet apart, and in a year or two when they have filled up the space lift every second plant and set it out somewhere else, and in this way you can have your fence completely covered from the first summer. In poor or dry ground the plants needn't be so far apart. But there needn't be any fast rule. You can get them from any of the nurserymen advertising in GARDENING.

CHAS. DAVIS CHRYSANTHEMUM in full bloom, more than any other variety, resembles the frowsy, tow-headed foot-ball player, and its sandy chestnut color gives emphasis to the likeness.

THE DOUBLE-FLOWERING RUBBECKIA, GOLDEN GLOW has also found favor in the eyes of Europe, and it too has been bought up here and shipped there in quantity. The picture of it in GARDENING, September 15, '96, page 5, was the cause of this; it was the truth and the keen-eyed Briton knew it.

CUPID SWEET PEA.—From far and near comes a wail of disappointment. Now this is unreasonable. The plant was given out as a 5-inch tall one; could you consistently look for blossoms bigger than the plants themselves, or on spikes a foot long? Come now, be reasonable, weigh things for yourselves.

NEW CANNAS.—France isn't having a monopoly of the business of raising new cannas. America is having a share of it. The agent of a very prominent European florist firm has just gathered up a big collection of the new American-raised varieties and sent them over to Europe. His exclamation to us was: "Have you seen them? Oh, man, aren't they fine?"

STREPTOCARPUS.—The hybrids have flowered nicely all summer and I have potted them into larger pots and they are coming along nicely, and I think they will flower good all winter. But how slow *S. Wendlandii* is in blooming! It has only one leaf, but I put three plants in one pot, pointing the leaves out in different directions, this gives the plants a nicer appearance than the one leaf only; the leaves are 13 inches long and 8½ inches wide; the plants are in 6-inch pots and are from seed sown last February.

THE BOSTON FERN.—There is no doubt whatever of the excellence of this nephrolepis, or "sword fern," as a house plant, and its free-growing properties are extraordinary. A few New York florists discovered its worth a year ago and filled up their greenhouses with it and are now reaping a golden harvest from it. European florists are now discovering its value, too, and importing lots of it from this country. As a market or house plant it matters little whether it is new or not, so long as it is good, and it is good.

COKE DUST.—What about it? We can get it here in large quantity, and we use it on pathways and as a bed to stand pot plants on, and until recently had evil suspicion of it. It is what is used as a thick bed under granolithic pavement. One day a contractor called our attention to the fact that he was putting a thick layer of clay between the coke cinders and the iron of one of the bridges here, because, he said, the cinders always ate into the iron. This set us a thinking: If these cinders could corrode iron so seriously, what about our plants, for we had used tons of them in covering over our potted bulbs in the cold frames? We didn't know and couldn't afford to take any risks so we have stripped our bulbs removing all the cinder covering, and used sand and loam instead. Who has had actual experience in this matter? Coal ashes are excellent covering for potted bulbs.

JADU FIBRE.—Some time ago we called your attention to this new potting material; it seems to be the ordinary "German moss" we use so much for bedding

the horses in our stables, put through some steaming and fertilizing process. Because of its lightness, sponginess and cleanness it was much lauded as a substitute for earth in growing pot plants, especially in cities where potting compost was scarce. We got a bag of it and gave it a fair trial and most everything we planted in it grew finely; because of its porous nature plants rooted more readily in it than in common soil, but their leaf growth was greater than their flower or fruit producing properties when compared with results from common ground. An East Indian paper shows in tabulated form its great superiority over common earth as a medium for propagating trees and shrubs in; cuttings rooted in a third less time in it than in the soil and cuttings of many kinds of plants rooted in it that failed to strike in earth.

A TRAVELLER'S NOTES, by James Herbert Veitch of London is the record of the author's experience in a journey of horticultural research around the world in 1891—3. It is a magnificently gotten up work, well illustrated, 12½x10 inches, and contains over 200 pages. Its principal chapters are on Ceylon and Southern India, Bombay to Lahore, Delhi to Calcutta, Penang to Singapore, Java, Hong-Kong and Canton, spring, summer and autumn in Japan; Corca, Queensland and Western Australia, South Australia, Victoria and New South Wales, and New Zealand. The author is the son of the late John Gould Veitch (who over thirty years ago explored Japan on a similar errand and with great success), and is connected with the great Veitch firm of nurserymen of London. His chief mission abroad was to find new and rare plants, and observe how these plants grew in their native countries. When we take into consideration the vast knowledge and familiarity the author must have acquired in his life long intimacy in the greatest exotic plant nursery in the world, one would naturally expect something good in his notes of a two-years journey in such far-away lands, and we are not disappointed. The work is intensely interesting from first to last, and there is a very complete index.

NAMING FLOWERS IN COMPLIMENT TO PEOPLE.—If you raise a lot of nice new chrysanthemums from seed and you think a few of them are good enough to keep and propagate for future years, of course you want to name them and you hunt around for the names of members of your family or other friends or patrons to give to your flowers, meaning thereby to compliment your friends whose names you have adopted. No doubt your intentions are good and kindly meant, but the effect is often very disappointing. In others eyes these chrysanthemums may be far from as beautiful as in yours; when grown by other people they may be poorer or behave worse than they did with you, and they are rejected. The people have better plants and better flowers than yours make, hence don't want yours and stop growing them. Now then what about the compliment paid to the friend after whom you named the flower? In the maelstrom of life the variety has proved inferior and is discarded, and if the name had been registered it too is lost, and it cannot be applied to any other variety, no matter how good and enduring it may be, so be careful. Take a list of the chrysanthemums of ten years ago, and it may surprise you how few of the varieties named in it are in cultivation to-day; perhaps among a hundred sorts you have not got one of them. Was

it a compliment to the ladies of ten years ago to have their names tacked on to varieties that are entirely repudiated to-day? Better be careful, folks are a good deal more sensitive in this matter than one is apt to think.

THE JAPANESE UMBRELLA PINE (*Sciadopitys verticillata*).—A writer in the *Gardener's Chronicle* says: "The soil they grow best in is loam, peat and leaf soil in equal parts. They require to be planted in a sheltered situation, as cutting cold winds very soon change their color; they also require a certain amount of shade and copious supplies of water during the summer months when growing freely." Now this is all very nice and pretty and true too may be, but what on earth's the use of all this fuss and feather, enough to terrify a person into omitting this little gem from his garden. Turn into GARDENING vol. I, October 1, '92, page 25, and look at the specimen illustrated there, one of the Dosoris trees engraved from a photograph. Wonder if they have a handsomer one in England? This is what we then wrote about it: "In our gardens this pine is of the easiest possible cultivation. Fairly good ground, good drainage and shelter in winter from sweeping winds suit it very well. And one great point in its favor is that few evergreens are easier to be transplanted successfully. The specimen in the picture is growing on a gentle S. S. E. slope in enriched very sandy land, well mulched in summer, and other trees near by afford it the necessary shelter from the searing winds." One of the finest specimens of this pine in the country is that at the botanic gardens, Cambridge, Mass.; we planted it there 17 or 18 years ago; it was a little plant in a pot, and we planted it out in October. The winter was severe and heaved it out of the ground, and it lay on the top of the bed in the snow from December till March, and it never suffered the least injury so far as we detected; we set it out again in spring and it started to grow right away and has kept at it ever since.

THE NEW PLANTS OF 1895.

The *Kew Bulletin* just to hand is entirely devoted to a list of and brief reference to these. "The present list includes not only plants brought into cultivation for the first time during 1895, but the most noteworthy of those which have been reintroduced after being lost from cultivation." In this list 363 new plants are referred to. Among them orchids prevail, for instance, we have 13 catasetums, 25 cattleyas, 4 cœlogynes, 43 cyrtipediums and 2 selenipediums, 19 dendrobiums, 7 lœlias, 16 lœlia-cattleya, and 8 odontoglossums. Of course these are not all species, on the contrary, the great majority are garden hybrids or varieties differing slightly from the typical plants.

America comes in for a fair share of the honor of raising or disseminating these new plants. We note *Agave Nickelsi*, from Texas; it looks like *A. Victoria-reginae*. Hybrid birches from *Betula pumila* × *lenta* are credited to the Arnold Arboretum at Boston. *Kalmia cuneata* a deciduous shrub, 2 to 3 feet high, and bearing creamy white flowers, indigenous in North Carolina is recorded from the Vanderbilt Arboretum (Biltmore) at Asheville. In Biltmore we also find *Rhus Michauxii*, a low growing much spreading new species found in the southern states. Mr. Roebling of Trenton, N. J., owns a splendid collection of orchids, and his gardener's name is Mr. Clinkaberry, an orchid

specialist, then no wonder we find them upholding our honor in this line. From Mr. Roebling comes *Cattleya Trianae Roeblingiana*, differing in color from the type, and *C. Trianae Clinkaberryana*, a large flowered variety. He also is sponsor for *Cyrtipedium Hurrelliana*, a garden hybrid between *C. argus* and *C. Curtisii*; *C. Smithii* which is a garden hybrid between *C. Lawrenceanum* and *C. ciliolare* and *Phajus Roeblingii*, a new species, with large Indian-yellow flowers. It comes from Kasia Hills. Mr. R. M. Gray of Trenton, N. J., has credit for *Lælio Cattleya Trentonense*, a garden hybrid between *Cattleya elegans* and *Lælia pumila*. *Crinum kircapae* is a garden hybrid obtained by T. L. Mead of Florida, by crossing *C. Kirkii* and *C. Capense-longifolium*. *Nymphœa Omarana*, raised by Peter Bisset gardener to Mr. G. C. Hubbard of Washington, D. C., is given as a garden hybrid between *N. dentata* and *N. Sturtevantii*.

Other American plants mentioned are *Calochortus luteus concolor*, *C. Lyoni*, and *C. venustus pictus*, all from California; *Opuntia tulgida* from Arizona; *Pentstemon Gordoni*, whose correct name is *P. glaber*, from the northern states; *Leptosyne gigantea* from California, and *Mimulus Clevelandii* from Southern California; and the *Coreopsis grandiflora* which has been so widely advertised and sold of late.

The Fruit Garden.

PLANTING FRUIT TREES.

I agree with Mr. Hoopes in his article in GARDENING, page 379, September 1, 1896, that it is difficult to make an infallible selection of fruits for the entire country, even for a limited territory, as soil, altitude and location vary so much. Please let me add or substitute a few varieties from experience and observation in this section.

APPLES.—Early Harvest has been uncertain on account of fruit growing imperfect; Primate and Garrettsen have given better satisfaction. To the autumn varieties I would add Fanny, a Pennsylvania apple not generally known, but in every respect the peer of Gravenstein or Jeffries. Smokehouse is another varieties which has not given the satisfaction of former years. Grimes Golden, which is unsurpassed for quality shows positive evidence of early decline in this section. The old Winesap is one of the leading winter apples in some sections (especially in Virginia) and if Paragon will prove as much superior as is claimed for it, it must become one of the most valuable winter apples.

PEARS.—Clapp has one fault, i. e., subject to core rot, which can be avoided to a great extent by picking it early and house-ripening it. Kirtland has the same fault, but as a market pear I would prefer the latter; both come at the same season.

OF CHERRIES, Napoleon, Rockport, Gov. Wood and a few others vary little in size, appearance and quality as also in productiveness, in which perhaps Gov. Wood will excel. Ida, a new cherry of same season, of equal quality and appearance, and larger than either of the former, is my first choice. Among Dukes Mr. Hoopes choice would be mine, but with us Early Richmond has always been earlier than Montmorency.

PEACHES.—I would substitute Mountain Rose for Early Rivers; it is not

quite so early, but far superior in quality, with slight difference in size. Stuart, the World and Old Mixon are so similar in size, quality and time of ripening that either will fill the same bill, but I would have Reeves in the smallest collection. It comes before Late Crawford, but of better quality and fully equal in size, possibly, though, not quite so productive. Globe comes between Reeves and Late Crawford; in quality between the two, but in size larger than either; in this section, however, it has not been sufficiently productive to induce extensive plantings. Salway coming after Smock is not to be recommended too far north, since it will not ripen well in cool and wet weather, but if warm and dry at ripening season it will color nicely and be of first quality. H. M. ENGLE.

Marietta Pa.

WINTER PROTECTION FOR BERRY BUSHES.

Winter protection is an absolute necessity for growing small fruits successfully in a northern climate. It should be practiced in every locality where the temperature reaches zero, or below. Even in localities where plants show no injury, and among those considered most hardy, the vitality is often affected, and the succeeding crop much reduced.

The best winter protection for blackberries, raspberries and grapes consists in laying them down and covering lightly with dirt. If plants have been well mulched in summer with green clover, clean straw, or coarse manure, as they should be, less dirt is required by using this mulching. In laying plants down (the rows running north and south), commence at the north end, remove the dirt from the north side of the hill about four inches deep; gather the branches in close form with a wide fork, raising it toward the top of the bush and press gently to the north, at the same time placing the foot firmly on the base of the hill, and press hard toward the north. If the ground is hard, or bushes old, a second man may use a potato fork instead of the foot, inserting same deeply, close to south side of hill, and press over slowly, until nearly flat on the ground. The bush is then held down with wide fork until properly covered. The top of succeeding hill should rest near the base of preceding hill, thus making a continuous covering. In the spring remove the dirt carefully, with a fork, and slowly raise the bush. With hardy varieties, and in mild winters, sufficient protection may be had by laying down and covering the tips only. Grapes, being more flexible, are laid down without removal of dirt near the vine. There is no more important work in the fruit garden, than winter protection, and there is no work more generally neglected. Let it be done thoroughly, after frosts have come, and before winter set in. M. A. THAYER.

Sparta, Wis.

THE RUSSIAN TREE FRUITS.

It is now more than fifty years since a few varieties of Russian apples reached America by way of England. Of these Oldenburg, Astrachan, Alexander and Tetofsky were accepted and propagated to some extent as desirable summer and early fall fruit. Few if any additions were made to this list until about 20 years ago; when, at the urgency of settlers in the new states of the upper Mississippi valley, the Agricultural Department at Washington brought to this country a large assortment of Russian apple trees, cions of which were distributed through both the East and West, and even as far

south as Alabama, in the usual way, through congressmen, to farmers, promiscuously; and as very few farmers can graft (simple as the operation is), these were probably mostly thrown away. At any rate, ten years later, comparatively few of them were known, or in cultivation.

But the necessity still remaining for fruit trees which would endure the winters of the northern tier of states and Canada, it was arranged that two experts, Prof. Budd, of the Iowa Agricultural College, and Mr. Charles Gibb, of Montreal, should proceed to Russia, and obtain from among the nurserymen and orchardists of that empire, the best possible collection of tree fruits; not only apples, to which the national importation had been limited, but a full collection of all tree fruits known in Russia, of positive merit, and suited to American requirements. In this list it was intended to include summer, fall, and winter varieties of apples; and also seasonal varieties of pears, plums and cherries; all tree fruits, in short, that were likely to prove useful in our cold North.

The results of such an importation could only be fully known and estimated after a sufficient time to allow of the bearing and testing which must precede general acceptations. This testing is now beginning to show appreciable results in many gardens and orchards, from Maine to Dakota. In the northern states of the Mississippi Valley there is yet naturally some difference of opinion; and this will no doubt continue until the adaptation of different varieties to differing localities and methods of treatment is more thoroughly studied, and reported upon by experimenters.

One of the greatest difficulties in this connection arises from the fact that these fruits were to a considerable degree obtained from a portion of Russia many degrees north even of our northern boundary, and consequently where the season of growth is considerably shorter than on the same parallel in America. The results now show, as might be expected, that some if not all of the winter sorts are not as good keepers here as in Russia; and the question is anxiously being asked whether any of the Russian apples will continue to be such, even in our northern tier of states, and in the southern parts of Canada.

As variety after variety has come to fruitage in my orchards, I have watched and tested them with lively interest; and I have now become quite convinced that we are to get from among these Russians a sufficient number of good marketable winter apples to put us, as growers, upon an equality with orchardists handling the old standard English varieties, and their native seedlings. One of these, which came to me without name, and which Prof. Budd has not as yet identified or found in his own great collection at the Iowa Agricultural College, keeps perfectly well into May, which is considerably better than our old Baldwin does under the most favorable conditions.

The apple here alluded to is not by any means the only one of these Russians which keeps into the winter season. There are a dozen or more in my collection which continue firm and well flavored two or three months after the usual time of gathering the fruit in the fall. We also have some valuable native seedlings (of which the now widely known Scott's Winter is a representative), that are good keeping fruit. But we have not enough of these to make more of the same class less highly esteemed, or less than very

welcome, whether from abroad or at home. With these varieties now in possession, and the reasonable prospect of continued additions, the "cold north" from Maine to Dakota, will soon be acknowledged as a legitimate section of the great northern fruit belt of our continent. As new accretions to this already valuable collection are made, interest in the subject will be more and more aroused. The high color of nearly all these northern fruits is in itself quite important especially as this is, among these northern fruits, associated with high flavor in many instances.

T. H. HOSKINS.

Newport, Vt., October 30, '96

Mushrooms.

EXPERIMENTS WITH MUSHROOM BEDS.

Mushroom growing will form a large part of our work this winter, and we mean to try and grow them in many different ways. Our first bed was put in September 2 and spawned eight days later. The first mess of mushrooms was gathered in just 32 days from the time of spawning. The bed was made up in the usual way excepting that I did not mix soil with all the manure. I used eight inches of rough, strawy manure in the bottom of the bed that no soil had been put into, as I think the heat keeps up better in this way; four inches of finer manure mixed with one-third of loam was then put on top. I always put in my beds with good hot manure, that is to say, when the manure has been well prepared and the rank heat gone. I like the heat of the bed to go up to 110° to 120°; it will soon come down again, and I have better success with such a bed. I have tried it when the heat of the bed would not go over 85° and got a fair crop, but the mushrooms are always slower in coming, sometimes taking ten weeks to appear. My present bearing bed was spawned when the heat in it declined to 95°, and in this way it stayed for nearly two weeks.

The experiments I tried were in the casing of the bed; instead of using soil I used dry cow manure in different ways; one part of the bed was cased with cow manure alone, and on this part the finest and earliest mushrooms grew. The mushrooms were showing in this part of the bed 26 days from spawning, where soil and cow manure were used in equal parts the mushrooms did not show till 36 days from spawning, and where soil was used alone the mushrooms are just beginning to appear; this shows that cow manure is better for casing than soil alone. Then again, I tried quite wet cow manure alone, and on this part the largest mushrooms were, and they came in as early as where the dry cow manure was used. All this is quite interesting, and we will give it a further trial in our next beds, which will be put in next week.

The bed I have in bearing now is 27 feet long by 4 feet wide, and from it I pick on an average 3½ pounds of mushrooms a day. In the early part of October the cellar was rather warm and the mushrooms were not so large as they are now, but now that the temperature has gone down to 50° they are coming on large and solid. I also tried putting the spawn in in pieces about 3 inches square, but find that the plan is not a good one, as the mushrooms come in in such large clumps that half of them have to be wasted while picking a few. A cake of spawn cut into 15 pieces is just about right.

DAVID FRASER.

Mahwah, N. J.

RAISING MUSHROOMS.—J. J. Abel, Boston street, Baltimore writes:—"Kindly let me know where I can find the directions you gave before the Mass. Hort. Society, two or three years ago, for raising mushrooms." Ans. In the proceedings of the Mass. Hort. Society, part I, 1894. Apply to Mr. R. Manning, Secretary Hort. Hall, Boston. But if you want to know how to grow mushrooms, it will pay you to get the book "Mushrooms: How to grow them."

Vegetables.

VEGETABLE GARDEN NOTES.

After again trying several varieties of lima beans, including Seibert's Early, all of which are good, we conclude that for next year we want only Dreer's Improved. Friends visiting us, who have known only other varieties, generally say they have never seen its equal. It is not much later than the earliest, and when it comes it is the only kind wanted by the family.

Again I would say if you want a sweet beet, sow yellow turnip; grown in the same bed with the much praised Sutton's Globe (the seed from Sutton), it is very much better on the table.

The Chantenay carrot for field culture is very satisfactory, because being thick and rather short it can mostly be easily pulled by the stems without digging.

This year the large white egg plant has been true to name and is of good size and excellent flavor. It grew and yielded better than New York Improved in the same bed.

Starting onions in flats inside has been successful and has the advantage, if no other, of giving them when planted out a start of the weeds.

Sutton's Vegetable Marrow has been very fine, better than any other summer squash we have had. It grows 18 inches long and is thick and heavy, but the vines are so rampant that they need a field to grow in.

The tomato is greatly modified by culture. Plants from the same sowing of a leading variety were set, a few in an old hotbed to hurry them, and allowed to fruit there; these were of incomparably better form and substance than those planted in a rather poor field, and then these well fed plants gave us our latest as well as our first tomatoes.

E. R.

Plainfield, N. J.

ONION SEEDLINGS INDOORS.

Inquirer, N. J., asks: "Is it well to transplant onion seedlings in flats before taking them to the open ground?"

If the seedlings have come up thickly in the flats and are early, it would be well to transplant them pretty close together into other flats, but if they are not very thick and not too early to stand in the boxes unmolested till planting out time, let them alone till then. We have always pricked them off into other flats, or as you say, transplanted them, it saves them from damping off. But few amateurs will ever bother to do this.

BROCCOLI V. CAULIFLOWER.—E. R. asks: "Is Broccoli desirable where cauliflower succeeds? And will it grow where cauliflower does not?"

We prefer the cauliflower. So far as our experience goes—and we have grown

both for many years—broccoli has no advantage over cauliflower in the matter of easiness of cultivation, certainly of heading, or immunity from club-root or other root disease.

Miscellaneous.

WRITINGS ON LANDSCAPE GARDENING.

There is no American text book that is correct in principle and at the same time adequate to guide one in meeting the many practical questions that are constantly arising in the practice of the profession. Downing's works are, without doubt, the most valuable. The books that state most clearly and concisely the principles of the profession were published in England about 100 years ago, and they were written at a time when there was a high appreciation of the work of the trained landscape gardener.

The books that Mr. Frederick Law Olmsted referred to his pupils to read first, were the following, which are mentioned in about the order that they were to be taken up:

Wheatley's "Observations on Modern Gardening."

Sir Uvedale Price's "On the Picturesque."

Allison on "Taste"

Gilpin's works and Repton's.

Of the American Works, his preference was for those of A. J. Downing.

The late Henry Sargent Codman prepared a condensed list of the more noteworthy books in the *American Florist* of April 1st, 1890 (Volume 5, page 398.)

If one were to select a dozen books from this list, I would recommend the following:

Horace Walpole's "History of the Modern Taste in Gardening" Strawberry Hill, 1762-1771.

[CONCLUDED ON PAGE 78]

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Thomas Whateley (or Wheatley) "Observations on Modern Gardening. London, 1793.

Sir Uvedale Price. "On the Picturesque" Edinburgh, 1842.

Humphrey Repton. "Observations on the Theory and Practice of Landscape Gardening." London, 1803.

Wm. S. Gilpin. "Practical Hints upon Landscape Gardening." London, 1835.

A. J. Downing. "A Treatise on the Theory and Practice of Landscape Gardening, adapted to North America." New York and London, 1875.

Edward Kemp. "How to lay out a small garden." London, 1860.

H. W. S. Cleveland. "Landscape Architecture as applied to the wants of the West." Chicago, 1873.

Walter Howe. "The Garden as considered in Literature by certain polite Writers." New York, 1890.

All of these books with the exception of a revised edition of Downing's works are out of print and must be sought for through dealers in second hand books. Probably any one of them could be secured in time by such dealers if an order was placed in their hands.

Of the more recent books than those named in the list referred to, "Landscape Gardening" by Samuel Parsons is attractively written and beautifully illustrated. It refers more particularly to lawn plants and lawn planting.

Elias A. Long has published a book on "Ornamental Gardening for America," which is, as its title implies, a book on ornamental rather than landscape gardening.

Of the serial publications which have given the most attention to practical hints on the execution of work and the handling of plants, in my opinions, GARDENING takes the lead.

WARREN H. MANNING.

AWAY WITH THE BLOOMERS.—As a woman who has done garden work as long ago as when in childish play we used to make a garden, I too protest against bloomers for women gardeners; it is not necessary at all, and to my mind must be embarrassing in the extreme. In Berlin, Germany, Frege street, 42, is a garden school for women of a very high standard, the young girls (graduates of high schools) wear for outdoor work shorter skirts than for indoors, down to their ankles, that's all, and in rainy or wet weather, wooden shoes. We ought to have such schools here, and I hope earnestly that before long we may have them.

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BULBS AND TUBEROUS ROOTED PLANTS (Allen).—Over 300 pages and 75 illustrations. A new work by a specialist in this line. Tells about lilies, cannas, dahlias, hyacinths, tulips; and all manner of bulbs and how to grow them indoors and outdoors, summer and winter. \$2.00.

MUSHROOMS: HOW TO GROW THEM (Falconer).—The only American book on the subject, 29 illustrations. Written by a practical mushroom grower who tells the whole story so tersely and plainly that a child can understand it. This book has increased mushroom growing in this country three fold in three years. \$1.50.

SUCCESS IN MARKET GARDENING (Rawson).—Written by one of the most prominent and successful market gardeners in the country, and who has the largest glasshouses for forcing vegetables for market in America. Outdoor and indoor crops are treated. Illustrated, \$1.00.

THE ROSE (Ellwanger).—The standard work on roses in this country and written from a field affording the widest experience in practical knowledge and opportunities for comparison, and where every variety of rose ever introduced is or has been grown. \$1.25.

THE BIGGLE BERRY BOOK (Biggle).—A condensed treatise on the culture of strawberries, raspberries, currants and gooseberries; with truthful colored illustrations of 25 varieties of strawberries, 8 raspberries, 5 currants, and 5 gooseberries; 35 illustrations in black and white; and portraits of 33 of the most noted berry growers all over the country. 50 cts.

THE PROPAGATION OF PLANTS (Fuller).—An illustrated book of about 350 pages. It tells us how to propagate all manner of plants, hardy and tender from an oak to a geranium, and describes every process—grafting, budding, cuttings, seed sowing, etc., with every manipulation pertaining to the subject. It is the voice of practical experience, by one of the most brilliant horticulturists living. \$1.50.

MANURES (Sempers).—Over 200 pages; illustrated. It tells all about artificial, farmyard and other manures, what they are and what they are good for, the different manures for the different crops and the different soils, how to apply them, and how much to use and all in such a plain way that no one can misunderstand it. The author is an active, practical, horticultural chemist. 50 cents.

DICTIONARY OF GARDENING (Nicholson).—An inimitable work. An encyclopædia of horticulture. It is the ready book of reference for all cultivated plants, including the most obscure genera and species as well as the most familiar. It is standard authority on nomenclature. An Eng-

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Fruits and Fruit Trees of America (Downing). \$5.00.

Fruit Garden (Barry). \$2.00.

Small Fruit Culturist (Fuller). \$1.50.

Gardening for Profit (Henderson). \$2.00.

Practical Floriculture (Henderson). \$1.50.

On the Rose (Parsons) \$1.00.

Truck Farming at the South (Oemler). \$1.50.

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ART OUT OF DOORS (Van Rensselaer).—Hints on good taste in gardening. \$1.50.

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THE WILD GARDEN (Robinson). How to make all outdoors beautiful, more especially the wilder and rougher parts of the grounds about our homes, by the greatest master in that art. Splendidly illustrated from life. \$4.80.

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ACCORDING TO SEASON (Dana).—Talks about the Flowers in the order of their appearance in the woods or fields. \$0.75.

THE ENGLISH FLOWER GARDEN (Robinson).—This is the best book on outdoor ornamental gardening extant. It deals with hardy flowers of all kinds, and tells us how to grow them and how to plant them to secure the most perfect growth and charming results; it enumerates and describes most every plant of the kind worth growing; it has 832 pages and many hundreds of illustrations. Its author is the greatest master in ornamental gardening who ever lived. Price \$6.00.

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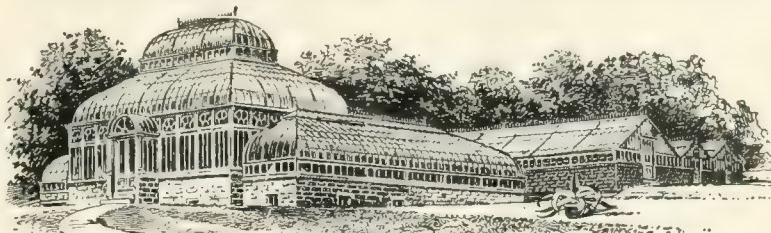
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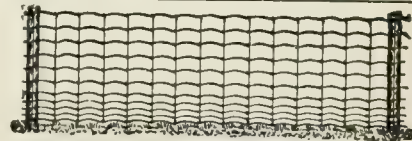
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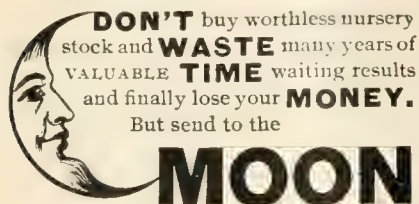
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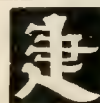
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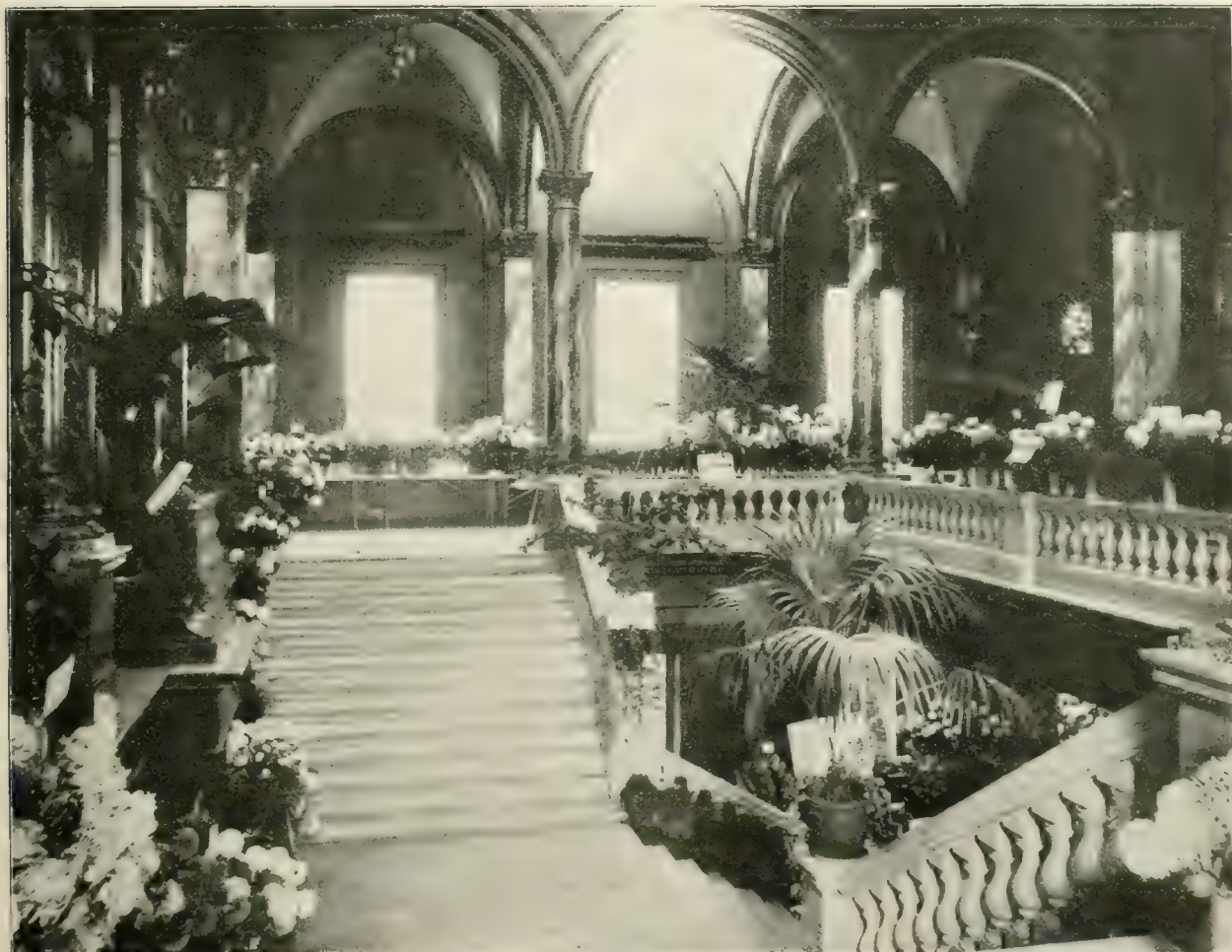
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No. 102.



PART OF THE PHILADELPHIA CHRYSANTHEMUM EXHIBITION.

Chrysanthemums.

THE CHRYSANTHEMUM EXHIBITIONS.

There seems to be no falling off in the interest in the annual exhibitions of chrysanthemums in November. During the month just past exhibitions were held in Philadelphia, Boston, Chicago, St. Louis, Providence, Montreal, Baltimore, Indianapolis, Cleveland, San Francisco, New Bedford, Mass., Poughkeepsie, N. Y., Frederick, Md., Syracuse, N. Y., Kansas City, Mo., Louisville, Ky., New Orleans, Toronto, Springfield, Mass., Hartford, Conn., Milwaukee, Wis., Worcester, Mass., Orange, N. J., Grand Rapids, Mich., Germantown, Pa., Hagerstown, Md., Carthage, Tenn., and Chattanooga,

Tenn. The above were all given by organized societies, and in addition to these there was a host of smaller displays in various cities throughout the country.

The production of new and improved varieties continues, and this is undoubtedly a factor in maintaining the interest in the chrysanthemum.

In this issue appear a number of engravings from photographs taken at some of the exhibitions of this year.

ARRANGEMENT OF CHRYSANTHEMUMS IN JAPANESE STYLE.

The engraving on next page is from a photograph of three vases arranged in Japanese style by Prof. Choyo, and shown at the recent Chicago exhibition. The small vase in the center is over 300 years

old, and that at the right is over 200 years old. The flowers are held in position by pieces of broken stems of chrysanthemums wedged in the vase crossways.

The vases at the ends are a pair for a wedding. The one at the left has white flowers above and red below, and is intended to be placed in the house of the groom, while in that at the left end the color arrangement is reversed, and this is to be placed in the house of the bride. In the one at the left the half-opened flower at the top indicates hope. The bride's vase is not so favored as she merges her identity with that of the groom.

Prof. Choyo explained that in the Japanese symbolism white flowers represent purity and strength, and are therefore masculine, while red flowers represent beauty and delicacy, and are therefore feminine.



DECORATIONS OF THE GRAND STAIRWAY AT PHILADELPHIA EXHIBITION

Trees and Shrubs.

BIRTHDAY TREES.

The practice of planting trees as mementoes of the recurring birthdays of our children, is not as prevalent as it should be. We give them toys and bric-a-brac that in time are lost and pass out of sight, and at maturity are remembered only in the uncertain kaleidoscope of the past. Why not give them something that will grow up with them? Something that increases in grandeur and beauty as they increase in stature and wisdom?

Why not plant a tree at each birthday and let them watch and care for it? It not only teaches them to love this creation of their Maker, but incites an interest in horticulture that may be a blessing to them in after life, bringing them nearer to the heart of Nature, for does not Shakespeare tell us:

"And this our life, exempt from public

"haunt,

"Finds tongues in trees, books in the run-

"ning brooks,

"Sermons in stones and good in every-

thing."

It is true that all birthdays do not come at planting time, but that need be no hindrance. If the tree is wanted in the heat of summer, or even in the dead of



CHRYSANTHEMUMS ARRANGED IN JAPANESE STYLE BY PROF. CHOYO

The central vase was arranged simply as a study and has no special symbolism. It should be noted that in no vase are two flowers placed at exactly the same height, and in no case are the lines of the stems parallel.

In speaking of the use of flowers Prof. Choyo said that a Japanese would never wear a full blown flower. That would signify that he had nothing further to look forward to. The half-opened flower is always used for wearing.

The Japanese name of the chrysanthemum is pronounced "Keeko." The chrys-

anthemum is not only the national flower of Japan, but it is the badge of the Imperial household. Its adoption as the Imperial badge came about through the resemblance of the single varieties to the disk of the sun with its rays of light. The Japanese Emperors are said to be descended from a god that came from the sun.

The national holiday is called "Chrysanthemum Day," and on that day all citizens decorate their houses with the national flower and exhibitions of the flower are given.

winter, a little foresight can make the planting successful. Procure at the proper season moderately small thrifty specimens, known to be hardy in your section, and choosing some temporary resting ground, plant in strong willow baskets, sinking the basket into the soil. When the birthday comes, lift the whole thing and plant basket and all in its permanent home. The basket soon decays and the tree moves on as if not disturbed.

If the birthday occurs during the winter months, mulch heavily with manure the hole where the planting will be, and



PART OF THE PHILADELPHIA CHRYSANTHEMUM EXHIBITION.

also at the root of the tree itself. This prevents a too solid freezing of the soil and renders planting practicable.

What a mine of pleasure is open to that child who can in years after point out to his or her children a matured specimen of a Colorado blue spruce or a handsome tulip tree, and say this was my birthday gift when I was three years old.

Egandale.

W. C. EGAN.

PREPARING LARGE TREES FOR REMOVAL.

It very often happens that it is desirable to transplant large trees which ordinarily it would be out of the question to move successfully because of their size. There is a way to prepare such trees that their removal with safety may be attempted with an almost certainty of success.

In the spring, before the buds burst, or in the fall after growth for the season is over, they must be root pruned. Suppose a fruit or shade tree with a trunk six inches in diameter, is to be removed. Dig a trench in a circle around it at a distance of about six feet from the stem. Dig it to a depth of about three feet or more, cutting off clean, with an axe or hatchet, all or nearly all of the large roots met with. Then fill in the soil, or if it be poor, get richer soil for the purpose and fill in with it. For every root cut off in this way dozens of smaller ones will take their place. If done in spring the tree can be removed the ensuing autumn, as there will be an abundance of small roots, which will ensure its life, as it is these smaller ones which feed the tree.

In digging about wildlings in the woods, having never been removed, but very few roots of any kind would be met with, and

the same is true of hickories and walnuts that have been transplanted. It is wise in the case of these trees to prune the tops in closely at the time of the pruning, or when transplanted, to make a success of the work. With the average lawn tree but little pruning of the top is required when root pruning a season in advance has been performed. JOSEPH MEEHAN.

NOTES ABOUT TREES.

If you have a prized evergreen recently planted in an exposed situation put a wind break of some kind at the side exposed.

When planting trees next spring note the direction of the prevailing winds in your section, and bear in mind the fact that in time exposed trees are more heavily branched at the side opposite from which the wind comes. In planting place what you might term the best side towards the point of compass from which the wind prevails, as in time the opposite side will fill in.

Young trees whose heads are not in good form by reason of the leader being out of line, or the branches too crowded at one side and too open at the other, presenting a case where judicious pruning will not remedy it, can be tied in shape now or early next spring. Use a soft strong string or marlin run through a piece of rubber hose, and if necessary use cane stakes with small holes bored through the ends and tied to the branches to spread them apart, or spliced to the leader to straighten it. Left tied one growing season the wood remains in place and if well done, your object is assured. X.

Roses.

PREPARING BEDS FOR ROSES.

When we can do so, we take out all the natural soil from the bed to a depth of two feet and replace it with top soil from some pasture or other sod land taking the sod to a depth of from four to six inches and adding about one-third rotted cow manure to two-thirds of this soil. This we turn over two or three times and then put it into the beds, tramping it down lightly as the beds are filled.

PLANTING.

Hybrid Perpetuals we prefer to plant in the fall if the ground can be got ready in time, but if that is not possible they must be planted as soon as the ground can be worked in the spring. Persons intending planting should order their roses at once, for if delayed until spring the plants are almost sure to arrive too late for our short planting time at that season, and a good number of deaths will be the result next summer. If the plants are received in the fall they can be placed in temporary quarters and you can have them on hand when you are ready to plant out early in the spring.

The teas and hybrid teas we prefer to plant in spring as they all are more or less injured during the winter. But the hybrid teas will stand the next winter with an ordinary protection of strawy manure. We protect all of our roses in this way using two or three forkful of strawy manure to each rose bush placing the straw well up the stems. In some winters, the tea roses will be killed to the ground, but

with a few exceptions they will commence to grow from the root and in a few weeks make nice plants.

In planting roses we merely shorten the long shoots so that the wind won't break them, or by swaying back and forth,

repeating it two or three times, will soon put an end to the flies for a time at least. We have tried other remedies but object to most on the ground of their discoloring the foliage, and the water applied with force will answer every purpose.

manure. Then when our hot summer comes we give all our roses a good mulch of strawy manure and plenty of water when they need it, and by so doing we get plenty of fine flowers.

ROSES FOR RUSTIC WORK.

TWO FINE ROSES for covering rustic work, tree stumps, or for scrambling over trees in the wild garden are Bennett's seedling and Dundee Rambler. They are strong growers and bear thousands of small or medium flowers. Bennett's Seedling is a pure white double rose and a striking object when in flower. Dundee Rambler is also white and very fine. All of the Prairie roses lend themselves nicely to this mode of growth and look very well indeed. Another fine rose for covering fences, etc., is Empress of China, a beautiful rose, the color is similar to the old rose which is a favorite with every one, the Monthly China, which is found in almost every poor man's garden.

PETER BISSETT.

Twin Oaks, Washington, D. C.

CLIMBING ROSES AND CLEMATIS IN COMBINATION.

In England the more slender growing, large-flowered clematis are often planted in conjunction with climbing roses. As a rule the rose blooms but once during a season, and at a period earlier than the summer flowering clematis expands their flowers in profusion. Unless the clematis used be too vigorous the growth is not so dense as to materially interfere with the vigor of the rose, although it may be well to thin out or cut back the clematis somewhat towards the fall, in order to allow the full ripening of the new growth of the



NEW WHITE CHRYSANTHEMUM WESTERN KING

loosen the soil about the neck of the plants.

PRUNING.

We do our pruning in March. It is not safe to prune much before that time, as sometimes in February we have very warm weather, which starts the buds into growth, and then in March we may get several degrees of frost which kills back all young growth. If we have not pruned, the young growth will start from the tips of the shoots that would have been pruned back a little later, so that we lose nothing by the freeze; but on the other hand if they have been pruned in early February the hot weather pushes the buds, and the frost kills back to the old wood and the very shoots we had to depend on for our flowers got killed. As soon as flowering is over we shorten back all long shoots, and this must not be delayed too long, for if not done before our hot summer strikes us the plants will make a poor midewy unripe growth. When the leaves drop in the fall we go over and shorten back all long shoots so that the wind won't break them or loosen the plants at the collar.

TREE OR STANDARD ROSES are not worth the room they occupy, but if one wants a standard that will flower, allow one of the strong shoots that come from the ground to grow as long as it will, which will probably be 4, 5 or 6 feet. In the spring cut it back to the desired height, and you will have a standard rose that won't look unsightly, and from which you will be likely to cut some nice flowers. If you so desire, in treating roses in this way a young shoot should be trained from the ground to take the place of the old one the following year as it is not desirable to keep the old one over after it has once flowered.

FOR GREEN FLY we simply give the bushes a good hosing with pure water,



NEW WHITE CHRYSANTHEMUM MRS. MARTIN A. RYERSON.

For black spot we use 4 ounces copper sulphate to one gallon hot water, allow this to cool and then add 4 ounces of ammonia. This is sufficient for 5 gallons of water. It must be mixed in a wooden pail, or some earthenware vessel. Syringe the bushes once a week, trying to wet every leaf for this will check the disease, though it will not quite cure the plants of it. During the growing season we use liquid manure quite freely, and every spring give a generous dressing of cow

rose, that it may endure the trials of winter more readily.

I have grown a "pyramid" of roses. In the center of a round bed six feet in diameter, was placed an oak post standing seven feet out of the ground and three in. On the top of this post was a disk of wood two inches larger in diameter than the top of the post. Eight holes were bored, in a circle, through that portion of the board that extends beyond the space occupied by the top of the post. Four



SOME CHRYSANTHEMUM PLANTS AT THE CHICAGO EXHIBITION.

plants of the Crimson Rambler rose were planted near the outer edge of the bed and equi-distant from each other. Round iron rods, one-quarter inch in diameter were pushed into the ground—two to each plant—directly behind them and carried up through the holes in the disk above. The rods used were nine feet long and painted. The roses were trained to them.

In the fall the rods are taken out and the rose-vines laid on the ground and protected. Three similar rods are used one foot out from the post opposite three of the open spaces between the roses, the tops being tied to any of the other rods. In front of these were planted three clematis, which being cut to near the ground in the fall do not reach the top of the post and bloom until the rose is past its prime.

The Duchess of Edinburg, although a spring bloomer on the wood of last year, will bloom on new wood in late summer, and with young plants of Mme. Edouard Andre, the admirable free-flowering clematis, makes a good combination for this purpose, neither being too rampant in growth.

W. C. EGAN.

GOOD ROSES FOR WASHINGTON, D. C.

We have a large variety of roses in our garden out of doors and find that the following—we have many more sorts—are the most satisfactory:

Abel Carriere.—Imbricated flowers, velvety crimson; strong grower.

Alfred Colomb.—Bright red; globular form.

Anne de Diesbach.—Clear carmine rose, large; vigorous habit.

Baron de Bonstetten.—Rich velvety maroon, large full flower.

Baroness Rothschild.—Cupped form, clear light pink color; but scentless. It is a strong grower.

Captain Christy.—Flesh color, deepening in center, only a moderate grower.

Charles Lefebvre.—Imbricated form, reddish crimson color, sweet scented, a strong grower.

Duke of Edinburgh.—Scarlet crimson color, full form; strong grower. One of our best.

Earl of Dufferin.—Crimson shaded maroon, globular form; a fine rose.

Fisher Holmes.—Crimson scarlet; free blooming; strong growing.

Francois Michelin.—Deep rose, reverse of petals silvery.

Francois Levet.—Cherry red, free blooming; vigorous habit.

General Jacqueminot.—Scarlet crimson, free blooming; vigorous habit.

Her Majesty.—Pale rose, globular form, large, habit vigorous, but sparing in its flowers.

Jean Liabaud.—Crimson maroon; strong fine rose.

Jeannie Dickson.—Beautiful rosy pink, silvery edged, but it does not bloom as freely as we would like.

John Hopper.—Bright rose; vigorous. La Rosiere.—Crimson maroon, free-blooming, vigorous habit; a fine dark rose.

Mabel Morrison.—White tinged blush; a fine rose but shy.

Mme. Gabriel Luizet.—Bright silvery pink, free blooming, distinct; vigorous.

Margaret Dickson.—White with blush center, large bloom, but shy bloomer; vigorous. [So far it has almost failed to bloom with us, but it grows freely enough.—Ed.]

Mme. Victor Verdier.—Bright crimson, large, free; vigorous.

Mme. Plantier.—An excellent and abundant blooming white rose. It also makes an excellent bug trap. Have a few plants of it set here and there among your other roses, as the rose bugs will always go for it first; then first thing in the morning get your pail with some water and kerosene in it, and go out among your bushes and shake the rose bugs into the pail and in this way kill them.

Marie Baumann.—Soft bright red, a fine fragrant rose; good grower.

Marshall P. Wilder.—Cherry, carmine; a fine rose.

Maurice Bernardin.—Bright crimson, free blooming, strong grower.

Merveille de Lyon.—White shaded satiny rose; strong grower.

Mrs. John Laing.—Clear soft pink, a fine rose; vigorous. [All points considered we regard this as the finest pink hardy rose in cultivation.—Ed.]

Paul Neyron.—Deep rose color, very large.

Victor Verdier.—Clear cherry rose, a fine flower and vigorous plant.

White Baroness.—A pure white form of Baroness Rothschild.

The Persian and Harrison's are two fine yellow roses that may be planted in some corner of the grounds where they can naturalize themselves. Don't prune them if you can help it.

ROSES WE GROW LARGELY FOR SUMMER USE.

Bridesmaid.—Pink.

Agrippina.—Velvety crimson.

Augustine Guinoiseau.—Called the white La France. A lovely rose and free-flowering.

Duchess of Albany.—Like but darker than La France.

Gloire de Dijon.—Salmon-yellow, climbing, very free blooming.

Hermosa.—Bright rose, very free.

Kaiserin Augusta Victoria.—White, tinted with yellow in center, a fine summer bloomer.

La France.—Silvery rose, very free.

Joseph Metral.—Climbing, vigorous; a fine cerise flower.

Mme. Georges Bruant.—Pure white, but of little use for cutting.

Marie Van Houtte.—Pale yellow, tinted rose.

Mme. Caroline Testout.—Silvery rose, quite double; free.

beauty of its large panicles of white flowers, which come in July, when but few shrubs or trees are in bloom. Besides this when once planted it takes care of itself very well, and when a year or two have passed by and it has formed a good sized clump it produces one or more panicles every year. Hereabouts it has the common name of Adam's needle; the bayonet-like leaves with thread-like filaments hanging from them readily suggesting the thought of needle and thread.

This yucca is what is called an acaulescent species, that is, it makes no woody stem or trunk. There is, however an-

There is still another one which makes a trunk, which has lived out of doors here for several winters, and seems to have got a firm hold on life. It is the gloriosa. Wood's Class Book of Botany says it makes a stem three feet high, but I have seen them with trunks eight feet high in the south of England. This one is the most robust looking of all yuccas, and when in flower it is a magnificent object.

The Spanish Dagger, *Yucca aloifolia*, I have not seen tried out of doors here. It has narrow, rigid leaves, and is often found ten or twelve feet high in its wild state. There is a variegated-leaved variety of it. I lately saw one in a tub which was in flower. It was the first time it had bloomed, though the owner had possessed it for nearly forty years and had known of it ten years before that. It was but six feet high. It is probable that had it been out of doors in a favorable place it would have bloomed much sooner. Perhaps some southern reader can tell us the age they usually are when they first bloom.

If these partly tender plants, as they are supposed to be, can be coaxed along in Philadelphia, all points south should be able to succeed well with them.

It will not do to omit mention of the Rocky mountain yucca, *angustifolia*. Of course it is quite hardy, to start with. It has extremely narrow leaves. The flowers are produced as those of the others are but they appear earlier, in June with us, a month before filamentosa. Like the last named it makes no woody stem; the flower spikes start from the ground, as it were.

Yuccas should be transplanted in the spring, following the rule for all fleshy rooted things, as these are. There will be found long, fleshy, yam-like roots, and



VASE OF CHRYSANTHEMUM MRS. JEROME JONES. WHITE.

Marie Guillot.—White tinted yellow, large.

Mme. Agathe Nabonnand.—Salmon, shaded rose; free.

Mme. Elie Lambert.—Like a white Hermosa.

Meteor.—Velvety crimson; free.

Sappho.—Fawn color.

Souvenir de Wootton.—Deep red; a fine fall rose.

Souvenir d'un Ami.—Pale rose, strong grower.

Souvenir de la Malmaison.—Flesh tinted; fine large, full rose.

Mary Washington.—White with blush center, exceedingly free-blooming in clusters; we had a branch this summer that bore in a terminal panicle one hundred and eleven flowers and buds.

ROSES.

While rugosa, sweet brier, prairie and some other such roses are hardy enough, it is well to help the others a little. Mulch the beds with rough strawy manure. In the case of tea, noisette or other somewhat tender roses trusted out of doors, it is best to lay them flat on the ground running along in one line and then cover them over with grass sod turned upside down, and over this a layer of loam or coal ashes. Tea roses in the northern states however are a good deal safer in the cellar than in the open garden.

The Flower Garden.

YUCCAS.

The yucca commonly seen in northern gardens is the filamentosa. It well deserves a place in collections because of the



VASE OF CHRYSANTHEMUM MRS. S. T. MURDOCK. PINK

other one, called recurva, which some botanists have made but a variety of the filamentosa, but which, evidently, is a distinct species, which makes a woody trunk. The foliage is not so stiff as the former. Although this one does very well out of doors, an idea prevails that it is not hardy. It may be that plants have been had from the extreme south and have proved tender, and this may have given rise to an idea that it won't live out. But as it grows naturally where filamentosa does, when once acclimatized and plants are raised from the latter stock, it should prove hardy enough. Making a trunk as a tree fern does, it is what is wanted to plant on a lawn.

if a piece or two of these be cut off and planted young plants will be produced. In this way as well as from seeds a great many young plants can be had.

Phila.

JOSEPH MEEHAN.

LILIUM WALLACEI.

There is a peculiar charm attached to a lily that appeals to all lovers of the floral kingdom, and the term "fair as a lily" is fittingly used as the acme of loveliness.

Unless under favorable conditions, and intelligent culture, the number of species that can be grown is somewhat limited. *Lilium Wallacei* belongs to the class that, if given any show at all is sure to thrive



VASE OF LONG-STEMMED CHRYSANTHEMUMS AT THE BOSTON EXHIBITION.

and increase and bloom profusely. It flowers in the latter part of July, about the same time as the tiger and the speciosum varieties. The flowers are held erect, the petals opening out well, and expanding fully five inches, recurved. The color has been described as a vermillion-orange, and as an orange-yellow. When the petals are laid alongside of Mr. F. Schuyler Mathews scale of colors, they seem to compare with a shade between his pure orange and his salmon. The petals are spotted at the base and centre with slightly raised small maroon spots.

With me the flower heads stand some eighteen inches high, one stem clothed with dark green lanceolate leaves that are smaller and shorter as they near the flower. The flower is a good keeper when cut, needs no foliage but its own to set off its beauty and the color is pleasing either in the daytime or under artificial light.

It is still an unsettled question whether this lily is a species from Japan or a garden hybrid, but whatever its origin be it certainly is one that all should grow. It is one of the lowest-priced lilies in the market.

W. D. F.

FLOWER GARDEN NOTES.

If you have clematis or other herbaceous plants near your house where the snow swept off the porch is apt to accumulate over them and thaw and freeze, place a board or box over them, allowing a little air underneath.

Coal or wood ashes is excellent to put over any semi-hardy herbaceous plant not evergreen in its leafage.

If you have no evergreen boughs with which to cover evergreen perennials such as *Heuchera sanguinea*, perennial poppies, candidum lilies, etc. mulch around the neck of the plants with good short man-



VERY DWARF SINGLE STEM PLANTS AT THE CHICAGO EXHIBITION

ure, and then lay small tree or shrub brush thickly among the plants and cover with long straw or coarse grass. The branches prevent the crowding down of the covering when wet.

The old blooms of the *Hydrangea pani-*

culata grandiflora, can be used in place of oak leaves when filling a box to place over some tender plant, but the box must be water-proof.

In manuring your lawn, put it on more thickly under the trees for a space fully equal to the diameter of the head, especially under surface rooted trees like the elm, for the soil here near the surface has to support both the tree and the grass.

X

EUPHORBIA COROLLATA.

This flowering spurge is found wild along the railroad banks and in dry open fields. Yet when brought into the garden it furnishes one of the most useful cut flowers we have. It blooms almost continually all summer, sending up flower stems about two and a half feet high. These generally send out at the top fine wiry branches, each of which again branches into three or more smaller stems, that once more send out dividing branches, each of which bear panicles of very small white flowers. The top whorl of one main stem must contain somewhere near two hundred and eighty of these small white flowers, all held nearly clear of each other. At the base of these dividing stems are placed small, light green leaves which with the green furnished by the wiry stems, produce all of that color needed in decoration. Side branches, all divided and paniced as above described start from the main stem at intervals from the bottom up.

As white goes with almost any color, this flower can be used to lighten up heavier forms. Its staying qualities when cut is first-class. Its only fault is the milky juice its cut stems exude when first cut. A group of eight or ten planted in one corner of the vegetable garden for cutting purposes would be appreciated by those who make their own floral decorations.

R. A.

GOSMOS BIPINNATUS.

This beautiful Mexican annual has heretofore had the reputation of blooming in October no matter how or when seeded, self-sown plants in the open garden blooming at the same time as those started in heat in March. This year I noticed some plants from seed advertised as "Early Cosmos." They were planted in a spent hot bed and really bloomed all summer. They were a poor excuse for the lovely

autumn flower that Jack Frost once in a while allows us to see. The feathery foliage so abundant in the type was almost missing on these summer bloomers and made one think of a young chicken during moulting time.

Strange to relate, these plants matured seed that dropped, sprouted, and later flowered in my house. I transplanted a few to see what they would do. The plants were about a foot high, generally with but one flower, a terminal one.

Plants of the old-fashioned kind grown in pots and put under glass about October 1st do not open flowers any earlier than those out doors and do not have as fine foliage. I refer to glass without heat.

The Mammoth Cosmos is about three and one-quarter inches in diameter, petals a little over half an inch wide, radiating from the center and forming an eight-rayed star. In the perfection strain the diameter is three inches, but the petals are fully an inch wide and almost overlap each other forming a shallow saucer.

G. A.

CAMPANULA MEDIUM VAR. CALYCANTHEMA.

Above is the very long name botanically applied to the highly-prized cup and-saucer Canterbury bells.

Besides its gorgeous effect when planted in masses, it proves a most satisfactory addition to the list of those plants that can be taken up when in full bloom, potted and brought into the house, where if the fading blooms are removed it remains a thing of beauty for several weeks.

The type *C. medium* is a biennial indigenous to southern Europe where it was first described in 1597. The variety producing the "saucers" is known as *calycanthemum*.

The most pleasing colors to me are the pure white (*alba*), rose (*rosea*), and *striata*, being a ground work of white striped with a deep blue.

They are easily raised and cared for if one has a cold frame. Seeds are sown early in July, pricked off into temporary quarters as soon as large enough and in October planted in the cold frame, about forty to a sash. Here they receive the same treatment given to pansies.

In the spring they are transplanted to where they are to bloom. If planted in a mass they are placed about eighteen to twenty inches apart. In June and July they bloom most profusely and are in good form for a long time. Being biennial, when through blooming, their mission is ended, and asters or other plants must be provided to take their place.

In addition to those planted for floral effect in the borders, I use a few dozen in my cutting grounds, placing them fully two feet apart. Seven out of ten will assume a symmetrical form and can be used for decorative purposes indoors, the others furnishing cut blooms. When in bloom, if wanted for indoor decoration, thoroughly soak the soil around the plant and take it up with as much of a "ball" as possible. Pot it immediately and place in the shade for a few hours.

What a choice present to send to some sick friend. The plant here illustrated had been in the house over ten days before being photographed.

W. C. EGAN.

Engandale.

STAKING TALL GROWING PLANTS.

How often we see tall growing plants sprawling on the ground after a heavy rain or wind, or worse still tied up in such a manner as to bunch the blooms, crowding the flower heads and destroying all their individuality. A little ingenuity, a little patience and a small outlay of time and cash, will, if taken in season, preserve in the main, nature's distribution of bloom and defy the winds. For one dollar one can obtain a bundle of bamboo containing a hundred canes



CAMPANULA CALYCANTHEMA AS A POT PLANT.

seven to ten feet long and for a small sum a "hunk" of raffia for tying. This material is the strippings of a palm, averages three feet in length, is thin, pliable and strong and can be used for tying bouquets and for many similar purposes. It comes in a hunk like the old fashioned yarn, and to have it handy should be uncoiled and a strong string tightly tied around the thicker end and hung on a wall say eight feet high, then the bunch is divided into three strands and loosely braided, and then one or more "strings" can be easily pulled out as wanted.

Having the material for staking, all you now need is patience and ingenuity. I will give three examples of tying that proved a success this season. The plants were robust, grew high, and were exposed to heavy rains and violent winds and had they not been staked would soon have been prostrated. To the rear of a perennial bed were eight strong plants of the hybrid delphinium six to eight feet high. They were planted two feet apart, two rows. Four of the heaviest canes were forced into the soil near the plant, a foot or more deep, standing at an angle so as to spread some twenty inches at the top, and were then cut off four feet from the

ground. These canes were placed at the "corners" of each plant. When the delphiniums had reached a sufficient height a strong piece of raffia was tied to one stake a few inches from the top and then carried entirely around, embracing the four upright canes, being securely tied to each one in succession, thus forming a hollow square. Then the flowering stalks were mentally divided and certain ones tied to the raffia on each side and one to each upright stake, reserving one or more strong shoots for the center, which can be secured by running the raffia diagonally across from one stake to another, doubling it twice around each center stalk. Give each bloom stalk room to develop and when in bloom you will be repaid for your trouble. No confused mass of bloom interlocked and dishevelled but each spike will assume an airy individuality of its own that is charming.

Immediately in front of the delphiniums was a group of eight *Lychnis chalcidonica* of the double form four and one-half feet high, planted one foot apart. They were well established and threw up numerous flower stalks. Their character of bloom is quite the opposite of the delphiniums, being flat on the top and is more effective if the flowers can be kept



IN A CALIFORNIA GARDEN

moderately close together, you then get a sheet of color quite striking at a distance. A strong cane was forced into the ground at each corner of the group and one at each side midway between these, making eight canes used, each slanting slightly outward and cut off three feet from the ground. Two sets of canes were then fastened horizontally, one 18 inches from the ground, the other a few inches from the top along the four sides, thus forming again our hollow square. Slender canes were then laid across the opening, resting upon the lower lateral canes, one set running across one way and another set at right angles, all placed about one foot apart, leaving square openings about one foot wide. These were all tied to the side bars. The flower stalks come up through these openings, and a little help aids them in a proper distribution. When the flower stalks reached the upper side pieces, the same course was pursued as at the lower ones—viz.: canes were run across each way. The outer line of flower stalks feel the effect of the wind most and should, to make the job perfect, be tied to the outer side of the side bars. If this is done allow one "line" of flower stalks to grow up outside the lateral bars, then their foliage will hide all evidence of artificial help.

Not very far from the lychnis was four strong plants of *Coreopsis lanceolata*, open in habit and numerous branched. Neither of the above methods would look well in supporting it, so a strong cane was selected for each plant and two cross bars tied firmly on near the top, at right angles to each other, thus forming four arms. The shaft was then forced into the ground at the base of the plant and its main diverging stems fastened to the arms.

One word about tying. The surface of the cane is smooth and slippery and a strong wind may sway the mass of foliage, and to prevent the canes from slipping out cut a notch on opposite sides of all horizontal canes wherever you desire to fasten them to anything and then by

the aid of a sail needle you can carry the raffia through the cane and thus secure them.

W. G.

IN A CALIFORNIA GARDEN.

The accompanying picture shows a bold and effective piece of gardening, such as could be produced only in California. This is one of those fine pieces of work for which the Hotel del Monte, at Monterey, California, is famous.

At the left of the photo may be seen a beautiful specimen of *Agave rigida*, a native of Florida. The circular bed in the foreground, edged with fine sedums and echeverias, contains some good specimens of *Yucca aloifolia* and others. The white plume-like plant at the right will of course be recognized at once as *Gynerium argenteum*, the California Pampas Grass; what a noble form this assumes when in its element!

The whole picture must make our eastern gardeners wish for the climate of the Golden Gate.

A. B.

LINUM AUSTRIACUM is like an old tried friend, whose friendship is never effervescent and profuse, but gentle, constant and reliable. This perennial was brought to the English gardens from Austria in 1775 and in time reached America. It reaches a height of about 18 inches, and assuming the same dimensions in diameter, makes a symmetrical plant. The branches are racemose, and the flowers carried well out at the extremities. They are an inch in diameter, single, open, and of a delicate light blue, not produced very thickly at any one time but the single flowers are here and there, well distributed and having a setting of their own green, producing the effect of a large, open and airy bouquet. Individual flowers seem to last but one day and not that long if it rains, but with me each morning from June to the middle of October my "bouquet" is sure to greet me. Its companions may have been more dazzling in color, more profuse in bloom, but they came and disap-

peared, like some "sunshine" friends, while this gem remained constant and true. Propagated by seeds or cuttings and grows in ordinary soil.

HELIANTHUS ANNUUS (Sunflower).—The annual sun flower has sported into many garden varieties more or less worthy of cultivation. Their more proper sphere is enlivening the kitchen garden, although in large estates and perhaps some nooks in public parks, some varieties might be used to advantage. The original of the many forms now grown is a native of our western states and was first described in 1596. I have tried many of them, but now content myself with two varieties: *Oscar Wild* and *cucumerifolius*. The *Oscar Wild* reaches a height of 8 to 10 feet and the *cucumerifolius* 4 to 5. Both are the artists, type of flowers the former from 3 to 6 inches and the latter 2 to 3 inches in diameter, the centers dark and the petals numerous, slender and of a good yellow. A combination of the two forms make a good group. Sow the seeds in the open ground in ordinary soil and thin out to three feet apart.

HELIANTHUS MULTIFLORUS FLORE PLENO (dwarf double sunflower) is a garden waif without a habitat, but when well grown is one of the grandest flowers we possess. Had I but little garden space and but little time to give attention to flowers this is the one I should choose to plant. Then I would give it a sunny, well drained position, manure it well, and wait until August when I would be well rewarded with bright yellow blooms so like a dahlia in form as to mislead many. My plants are about 5 feet high and well covered with bloom from the base up, and I can count on them clear up to frost. Insects or drouth does not affect it. The foliage is pleasing and the color of the flowers exquisite, and nothing surpasses their lasting qualities when cut. They need a slight protection of leaves in winter and are readily increased by division in spring. They should be grown in masses and planted three feet apart.

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MALVA ALCEA, an European perennial growing some three feet high and as wide, produces pale rosy-purple flowers in profusion all summer. It is well suited for planting at the rear of a border.

AMONG the pictures of chrysanthemum exhibitions in this issue will be found a number of views at the Philadelphia show. These have a double use, as they not only give glimpses of the exhibition but also show the interior of the magnificent new hall of the Pennsylvania Horticultural Society, unquestionably the finest building in the country owned or controlled by a Horticultural Society. The horticulturists of Philadelphia have indeed reason to be proud of their beautiful new home. May other cities emulate their excellent example.

THE ordinary iron molasses faucet is best for use in manure water casks. It allows the water to run out quickly and does not choke up or leak.

WHEN LABELING newly planted trees next spring include their height and date of year they were planted. In after years this record will be interesting.

SAINTPAULIA IONANTHA is a little gem of a tender plant with violet-like flowers; it was a seed novelty a few years ago. We are informed that in the south of France it makes a splendid outdoor summer bedding plant.

BROOM HANDLES and the long window brush handles, obtained from a broom factory, and the slender ash rods used by rattan chair-makers, are handy requisites in a well regulated garden. These with a bundle of cane stakes furnish all the material needed to tie up plants.

HELIOPSIS PITCHERIANA used in large bouquets to cover open fire places in summer, when backed with asparagus foliage, is very effective. The deep golden yellow of its petals, when loosely arranged are well shown off by the foliage of this garden vegetable. Both are good keepers when cut.

ANTHEMIS TINCTORIA (yellow chamomile) is a desirable hardy perennial producing from July to November showy golden yellow, daisy-like flowers from one to two inches in diameter. The plant grows nearly three feet high and in time forms quite a clump. In exceedingly dry seasons, unless watered occasionally, it blooms out by August. It is a native of England, thrives under ordinary cultivation and is readily increased by division in the spring.

ACHILLEA PTARMICA FLORE PLENO—(double Sneezewort) is a free flowering perennial, hardy as a rock and one that should be grown in moderately poor soil or else it will sprawl in an unsightly manner. When grown in masses it does not seem capable of being staked up in a tidy form. If it can be kept erect, it grows nearly two feet high and produces constantly all summer and until frost small double white flowers in terminal corymbs splendid for cutting. It is easily divided in spring and in good soil spreads rapidly. It will do moderately well in shade.

CLEMATIS DURANDI is a hybrid between the European bush *Clematis integrifolia* and the climbing Chinese *C. lanuginosa*. It partakes of more of the characteristics of the former species. It is an almost constant bloomer and should be grown as a trailer rather than a climber, as it will not attach itself after the manner of the ordinary climbing forms and only grows about three feet high. Its large open, rich blue flowers are very pleasing and its freedom from disease and its hardiness render it a worthy addition to any collection.

LYCHNIS CHALCEDONICA FL. PL. produces, if grown in masses and well staked, a sheet of scarlet of such a vivid hue that if seen at a distance across a well-kept lawn and backed by a mass of the taller hybrid delphiniums, it stands out like the glowing colors of the setting sun. For broad coloring effect they should be planted in groups of not less than eight plants, set one foot apart, in a light sandy loam well enriched with old manure, and well and firmly staked in such a manner as to keep the blooms, which are at the extremities of the many stalks

sent up, close together, thus forming a sheet of flowers. With me this plant grows 4½ feet high and gives its best bloom in July and well into August. When the terminal blooms are faded cut them off and you will get some blooms during the balance of the summer from the side shoots. It is a hardy perennial and propagated by division in the spring. The single form is not worth growing.

PLATYCODON GRANDIFLORUM (Syn. *Wahlenbergia grandiflora* and *Campanula grandiflora*) is a beautiful flower of many names, and apparently numerous habitats, as it is given as a native of China, Mandshuria, Japan and Siberia. With good culture it produces its flowers at a height of nearly three feet. The stems arise rather stiffly and nearly straight and unless staked are apt to be broken by the wind. The buds before opening are balloon shaped but when expanded are like a shallow bell, of a dark rich blue and two or more inches across, and if the faded flowers are cut it blooms continuously from June to August. There is a dwarf form of this plant, recently introduced from Japan under the name of *Platycodon Mariesii* on which the flowers are larger than the preceding. Their culture is easily attended to. Provide them with a rich deep soil and stake them when approaching maturity. They are readily increased by division or cuttings in the spring.

THE CELLAR

Is a capital storehouse for certain plants. Such things as hydrangeas, crape myrtles, oleanders, daturas, myrtles, sweet bays, and the like should be kept in a cool part, say where the temperature runs from 35° to 40°; never let these plants get absolutely dry. Drouth may not hurt the daturas, fuchsias, and some others, but it does them no good. Gladiolus, tigridias, summer hyacinths and the like may be kept dry in flats, or hung up in bags, where they will be away from vermin, and in a temperature of 45° or thereabout. Dahlia and canna roots, and tubers of *Ipomoea paniculata* also live well in the same. While tuberoses, caladiums, gloxinias, and other tropical roots might exist fairly well in a low temperature we prefer one of 50° to 60° to keep them in. A draughty cellar is bad for all plants, and so is a dry parching place, such as near the furnace. A wet cellar is uncongenial to anything while deciduous or leafless plants and tubers may be kept in dark quarters, leafy ones as hydrangeas or evergreen ones like roses and myrtles or century plants or cactuses should have a little light. Roses in the cellar should be kept very cool, even to letting a slight frost touch them, and faintly moist at the root.

STIPA PENNATA.

(Feather Grass)

This ornamental European grass is well worth growing for winter bouquets, as it is easily handled and perfectly hardy.

The illustration shows the entire crop from a plot four feet square, and it required nearly an hour's time to clean the "beards" from their sheaves. The botanical name signifies "a silky feathery substance," alluding to the creamy-white plumes. It is an old plant in the English gardens, and the plumes are said to have been worn as feathers by the ladies.

W. C. EGAN.

PRIMULA STELLATA, the star primrose is a beauty. We have sixteen plants of it in the greenhouse, and they are begin-



STIPA PENNATA

ning to flower nicely; it is better than the Chinese one for cutting, and we like it very much. D. F.

The Fruit Garden.

FRUIT TREE BORERS.

The borer in apple trees comes from eggs laid in the ground by an insect, close to the trunk of the tree, in July and August. When hatched the grub bores into the tree, to make a home for itself for awhile. The boring is usually an inch or two below the soil, and its track is easily seen by the sawdust like exudations which appear where the grub entered. In August and September the search for it should be made; and a second one should be made in the spring following, to be sure that none were overlooked in the fall. It will pay well to do the work thoroughly the first time. If the borings were always straight there would be but little trouble to dislodge the pests at anytime, but sometimes the route of the grubs is an extremely tortuous one.

To be ready for the work of finding the enemy one needs a trowel to remove the soil from around the tree, a wire to insert into the hole, to pierce the grub, and a knife to cut away portions of the bark when the hole is so crooked that the wire must have a way cut for it. The grub oftentimes takes a circuitous route in its travels, but it works comparatively slow and there is no trouble in following it up the first season, which fact, as will be seen, renders the proper doing of the work the first season a matter of the first importance.

In young orchards that have been neglected, it is a good lesson to walk through them and see the number of prostrate trees which have been so honey-combed by borers as to break off at the base in high wind storms. There are more apple trees destroyed in this way than in all others combined. When the soil about orchard trees is level it is some

labor to dig out enough earth to work properly at getting out the grubs. It simplifies the work very much to have a slight mound about the trees if only an inch or two high, because the borer's work is generally just below the surface, and by digging away the two inches when time to look for them, the work can be much more expeditiously done.

In regard to preventing the borer, there is nothing that is not as much or more trouble than the looking for them and getting them out, which really is not hard at all. Strong washes in the soil are undoubtedly distasteful to them. It is a



GROUP OF SINGLE STEM CHRYSANTHEMUMS

fact that in country yards where dish water from the kitchen finds its way to apple, quince, peach and trees liked by borers, they are never troubled by them; and how the trees flourish when they get this kind of food!

Though old trees are not exempt, younger ones with more tender bark suffer the most. When setting out trees examine them well that no grubs are overlooked. Do not reject a tree because it has been bored. If set so that the hole is below the soil, as it should be, it will flourish well enough. M.

ENGLISH GOOSEBERRIES.

Notwithstanding the many attempts to grow the English gooseberry and the many failures, there are enough successful ones to cause other persons to make an effort to succeed with them. Failures usually come from mildew of both the foliage and fruit, and this mishap generally occurs in hot seasons and in the hottest weather. In the face of the fact that many have failed with them, there is the record of many others who have succeeded, even when no extra pains to succeed have been taken.

About Philadelphia there are many gardens where these bushes flourish. In some cases the plants are entirely in the full sun; but the most flourishing ones are those in small yards, where the soil is cool, because of the shade the buildings give. And these bushes bear not only one year, but every year. In one garden where the bushes bear unfailingly every year they are planted where the sun gets to them but little at all, because of large pear trees which almost surround the patch they are in. This particular lot of plants has been in the charge of the owner for thirty years that I know of, and he tells me that a crop never fails him.

Of late years an English sort called Industry has gained much prominence here, because it has done better than other ones that have preceded it. Even when in the full sun it has done very well in many situations. The English gooseberry is, however, a cool country fruit, and to succeed with it, it should be set in cool situations. A favorable place for amateurs to plant it is where it would get the morning sun, but none or but little after mid-day. The eastern side of a building would be a good place, and then in early spring give the plants a good mulching of some kind, to keep the soil cool and moist. It need not be a thick covering; just enough to well cover the soil is enough; long grass is as handy material as any and costs nothing. And when mulching this kind do the same with all other gooseberries in the garden as well

ascurrants. It will pay. Mulched bushes retain their leaves later in the summer than others, and this retention of foliage means good strong bushes the next season.

Gooseberries do not need very much pruning. They rarely grow so much as to need a great deal of it. A shoot may be out of place and should be cut off close to the main stem, that it will not sprout again, and old bushes need some cutting back to force out fresh growth, but to prune back the most of the previous season's wood is wrong.

JOSEPH MEEHAN.



VIEW OF CHRYSANTHEMUM EXHIBITION AT POUGHKEEPSIE, N. Y.

Miscellaneous.

CHRYSANTHEMUM COLORS DECORATIVELY CONSIDERED.

Among the multitude of chrysanthemums it does not seem improbable that some confusion may arise in the florist's mind regarding the true merit of a single type. A certain flower may carry with it all the excellence which the horticulturist or the florist desires, yet the exact æsthetic merit of this flower may be an open question in the minds of both. A comparative examination of a number of the newest types, leads me to believe that there are some whose excellent æsthetic qualities ought to be more fully recognized.

The J. Shrimpton, for instance may be favorably compared with the good old standby *Cullingfordii*, and I think it shows in a measure a superior quality. Its color is clearer, and less heavy; its type is of a strongly reflexed kind, which—at least in the specimens I have seen—is better developed than that of the *Cullingfordii*. The whitened backs of a few petals which show themselves accentuate the strong æsthetic red with a certain agreeable harmony of color. Beside this rather strong flower I like to see the delicate character called *Theo*, with its pure, cold white, its narrow, straight, thin petals, its gray, shadowy, colorless depths, and its splendid effect against the dark foliage. These two flowers are extremely valuable for an effect in red and white.

But *Columbine* is a duo-colored flower, with strongly incurved petals, and an effect of light, creamy-golden yellow, and depths of subdued pinkish orange as luminous as it is oddly indescribable. The flower color is graded from a deep tone at the base to a light tone at the top. Such a pretty double-toned flower

ought never to be in the company of another of the same nature. It always holds its own beside some chrysanthemum with a single tone of white or dull red.

Geo. Daniels, a pure white flower with broad, short, sharp petals, and a hemispherical form with just the faintest suggestion here and there of a pinkish flush, is certainly not a bad neighbor for *Columbine*, or even *Maj. McKinley*, with its soft coloring of orange-red and gold-red, its transparent tone, and its firm, good, sober green foliage.

Louis Boehmer still continues with its undiminished value of superb, æsthetic crushed-raspberry pink. Its depths are lustrous, and its white-pink, hairy surface is the softest thing imaginable in color. This flower is superb in the company of another white one; but in its proximity I have seen a yellow *Lincoln* which has succeeded in killing it—as some one has expressively said—in a dozen places at once! No, keep the sober pink

chrysanthemums away from their golden relatives, or else choose, if you will, to see them color-killed.

I am always delighted with the extreme type of the flower called *Vivian-Morel*. I use the term extreme with a good purpose, no other chrysanthemum seems quite so emphatic in character; its straight, or somewhat curved narrow petals, long and papery, are in strong contrast with those of such characters as *Mrs. Robt. Craig* (white), or *Golden Hair* (pale flesh-yellow); or *Clinton Chalfant* (yellow). These are all compactly built flowers, without a suggestion of the freedom which characterizes *Vivian-Morel*.

Here we have the truest liberty of form, combined with a corresponding freedom of color. The pink is delicate or strong, soft, toned, and graduated on the petal, so we cannot commit ourselves by attempting to specify one particular kind of pink. Without doubt this flower is an

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extreme type which is an always welcome accompaniment to some pale-tinted character of conventional figure, like President W. R. Smith, with flesh-pink incurved petals, of a waxy surface, or the old standby Ivory (white).

For excellent colors and decided forms, I like such flowers as Golden Hair and Mrs. Bishop; the former has, perhaps, a wavering color—something which I might describe as a liquid, ruddy gold in its depths—but a solid incurved petal. Its color is dual, but nevertheless well pronounced, and the hairiness of the petal somewhat subdues it. It is a fine flower in the company of white, or strong dark red.

Mrs. Bishop has a pure, all-over pale golden-yellow color, and finely radiating petals, which are well fitted to show nicely beside some compact flower like Mrs. Robert Craig; but I should keep Clinton Chalfant away from it, the latter has a deeper yellow color, light in its depths, but of so pronounced a tone that it is not apt to look well in the company of any flower save one which has the freest possible form; for instance, one like the anemone-flowered Garza, whose pretty radiate blossoms are a relief to one's eyes amid a group of compactly formed giants.

Speaking of giants reminds me of Mrs. Jerome Jones, whose portly figure and serpent-like curved petals are a great remove from all the types I have mentioned above. This grand flower, a pink-

[CONCLUDED PAGE 94.]

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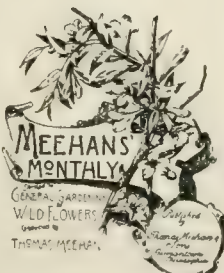
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stained waxy white, supported by the darkest possible, leathery, green foliage, is a character which ought to stand by itself. I would let Mrs. Jerome Jones severely alone. I mean that she should reign alone. She is politically supreme, and with any other company than her own, she is destructive to the extent of anarchy! What, for instance, would one think of a combination of Mrs. Jerome Jones with the old-fashioned, dainty flower called *Laciniatum*!

There is, at least, this to be considered in the use of chrysanthemums for decorative purposes; each flower has a type of its own, and either the types war with each other, or else they dwell in the realms of everlasting peace. It is not at all difficult to find the harmonious members of the chrysanthemum brotherhood, and *vice versa*, the theatrical Mrs. Jones and the puritanical *Laciniatum* in combination need no comments of mine to foreshadow another state of things.

But I will call attention now to an extremely odd-colored member of the brotherhood. Mrs. Geo. West, here we have a dull purplish, grayish flower, exceedingly variable in tone, but also quite refreshingly so. I would choose such a flower in the decoration of a white room. There is something strong of accent about it, and unless I preferred a white and yellow effect, I can imagine nothing more pleasing than the dark, somber and tonic effect of this flower amid weak-colored surroundings. Its color is æsthetic, and its form is thoroughly good; in combination with some large cream-white flower it finds its truest value. I hardly know what to say of its darker sister called *Octoroon*. This flower has a whitish-chocolate tone under electric light which is quite charming. Certainly this character is a strong one, and perhaps under the same conditions as those I have just described it must be beautiful. I would avoid, however, any accompaniment for it other than white.

Other flowers whose æsthetic coloring is greatly to be admired are, Eugene Dailledouze, with its extremely golden, liquid depths, its well-curved petals, and its fine blackish, leathery foliage; Mrs. Perrin, whose crimson pink is soft and luscious, and Minerva, whose light, pure, pale-gold yellow is unequalled by any other chrysanthemum. Its incurved, lightly twisted petal is well formed, and its foliage is effectively dark. This last flower is as pure in tone as the two former ones are soft; and in each case the juxtaposition of any flower of strong and uncompromising color is absolutely destructive of all artistic effect. Let each of these flowers speak for itself.

Julinda is a pretty flower of flat-topped figure, and slightly incurved petals with pointed tips whose light pinkish tone is sharply relieved against the ball of deep æsthetic dull pink beneath. This is a good pink flower for the company of some other one whose pink is quite dark, or for such a character as Mutual Friend, a white flower of excellent substance, often creamy or pink-flushed in its depths.

Whatever choice the florist may make of these chrysanthemums for decoration, he cannot err if he chooses white for an accompaniment in every case where color is puzzling, or non-committal. A bothersome chrysanthemum color is at once righted in the company of white; the same applies to a room-color of questionable nature. Try white and then add such other flower colors as may seem to fit in without causing a sensation!

F. SCHUYLER MATHEWS.

Boston, November 14, '96.

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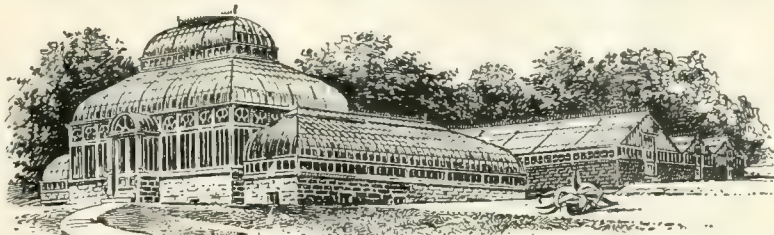
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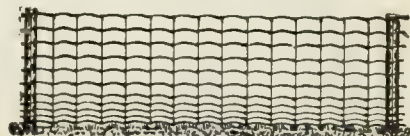
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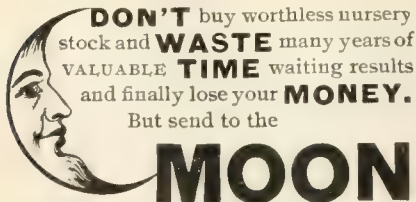
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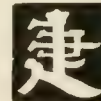
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EXOCHORDA GRANDIFLORA

Trees and Shrubs.

EXOCHORDA GRANDIFLORA.

Among the good things that northern China has given us *Exochorda grandiflora* stands out most prominently. It is perfectly hardy, but undoubtedly blooms more freely in very cold climates if planted in a protected position. It blooms in May; flowers white, large and produced in slender racemes. The foliage is a soft light green that contrasts well with the dark green foliage of *Styrax Japonica*.

Once in a while a plant is subject to that mysterious disease known as "the Japanese die-back." During the growing season, when in apparent full health, one or more of the main branches will die back to the trunk, the balance of the shrub evidently maintaining perfect

health. Next year, at some time during the summer other branches act the same, and in time the plant is worthless. But these are isolated cases, and plants are easily replaced from any good nursery.

TRANSPLANTING EVERGREENS.

Almost everyone who has planted evergreens has a favorite time he can name for planting. One person plants in spring and is successful, another in summer and meets with reward, and still another in winter and the trees grow, and from this they form the conclusion that they have found out the proper time for the work.

A good deal of the success in planting comes from favorable seasons following the work. A harsh winter finishes fall plantings in some cases and a dry summer, those of spring. In nurseries where all work is done for profit, experiments

are started early to find out the best time for planting, and it is the general practice to set out evergreens in the spring. Many kinds are set out in late summer with good success, notably retinosporas and other fibrous rooted kinds, but there is no time like spring for the whole collection of evergreens.

Whenever the soil has warmed up a little and has become so friable that it will crumble up fairly well, the work should be proceeded with. With us the time comes about the close of April. The soil should be in condition to break up well, that the fine particles can be got in about the roots to fit well.

When the plants are very small and are to be planted in rows, trenches are opened and a bucket of puddled water prepared. Into this puddle the plants are placed, and taken out by the handful and set in their places in the trench, fine soil thrown



YELLOW WOOD IN BLOOM.

over the roots, the soil trod in while the plant is held straight, and then the rest of the soil thrown in and the surface made level. Where thousands of little trees are to be planted tubs may be placed here and there to hold the water, or even "mud holes" formed in the soil. When treated in this way but few losses will occur.

There are planters who are quite successful who never puddle the roots, but they are careful men who do not let the roots dry out. Puddling obviates extra care, the roots cannot dry, and laborers can be intrusted to do the work who could not be so trusted under any other system.

Much the same plan may be followed with larger evergreens. A good puddling settles the soil about the roots firmer than could be done in any other way. And when roots have not been allowed to become dry, to have the soil in close contact with them, makes transplanting almost sure work.

Large trees should have the soil trod or pounded in about the roots, and when they are large they should be staked or supported in some way until new roots have got good hold. When the tops are blown about fibres are torn off the roots and the soil loosened about them, and trees die. This is especially the case with pines, which, having but few small roots, require more care than such evergreens as arbor vitæ, for instance, which are abundantly supplied with them.

Philadelphia. JOSEPH MEEHAN.

GLADRASTIS LUTEA. (Yellow wood.)

This member of the leguminosæ family is one of the only two species known in cultivation, and is a native of the south

central states. The other (*C. amurensis*), from the Amoor Valley, rarely grows over six feet high and can therefore be classed as a shrub. The American species has borne the name *C. tinctoria* and *Virgilia lutea*, but is commonly known as the Yellow Wood.

While perfectly hardy in the northern states, blooming freely in Wisconsin, it is rarely found in cultivation. It seems in most instances to make but little headway for the first few years after planting and its tender young growth burns and curls in the sun. Age remedies this tendency and in time it becomes a medium-sized round headed tree. In early June it is profusely covered with drooping panicles of white, sweet-scented blooms.

The illustration is from a photograph of a tree growing in the nursery of Messrs. W. S. Little & Co., Rochester, N. Y.

VASE OF HARDY TREE AND SHRUB BLOOM.

A glance at this vase shows how easy it is to get up a simple and effective flower decoration when hardy trees and shrubs are in bloom. Here are shown only three kinds of flowers, namely, spring blooming tamarisk (*Tamarix Africana*), wild cherry (*Prunus serotina*) and hybrid magnolia (*M. Soulangeana*), but a hundred others are just as available.

A word about tamarisk shrubs: The catalogues record a good many names; even the "Dictionary of Gardening" has several, and we have got and tried plants of most every name given, but among them all I fail to recognize more than two species, namely, *T. Africana*, the spring blooming one, and *T. Chinensis*, which has glaucous foliage and blooms in August and September.

The African tamarix forms a tall, wil-

lowy shrub, and its last year's growth is feathered all along with racemes of very small pink flowers that appear before the foliage and are in their finest condition with us about May 20-25. After the plants have done blooming we cut them hard back to keep them stocky and shapely, and then let them grow at will for a year. As the Chinese tamarisk blooms on the current season's wood and never on the old wood, we prune it in winter and never after growth begins in spring.

These tamarisks strike from cuttings of the ripe or old wood as freely as do willows. And in either case we always save the tamarisk prunings for stakes, for the growths are long, very clean and even in size, and the wood, unlike one year-old shoots of most anything else, is hard, wiry and lasting when cut.

The wild cherry is abundant everywhere, and is in its finest bloom about May 25. The European bird cherry (*Prunus Padus*) is much like our wild cherry, but blooms fully a fortnight earlier, being at its best with us about May 10; and there is a double flowering variety of this that for cut flowers is more showy than the typical form.

The magnolia belongs to the obovata section; that is, the class that blooms in April before the leaves appear, but for some reason or other, probably its hybrid origin, this one (*M. Soulangeana*), which is at its best with us about April 25, continues to bloom more or less after the leaves appear till June. And this is why we find it—flowers and leaves as well—associated with the tamarix and wild cherry in the vase.

W.

NATIVE SHRUBS.

Like Issac Hicks I have often wondered why we so seldom see our native shrubs



VASE OF HARDY TREE AND SHRUB BLOOM.

in cultivation, especially the kalmia and azaleas. In the spring of '95 I got a quantity of roots of both *A. nudiflora* and *A. viscosa* from the woods. I trimmed each one back to a single stub about one foot long, set in a bed composed largely of leaf-mold, and mulched heavily. Every one threw out numerous shoots, many of them growing 8 or 10 inches the first summer.

They nearly all bloomed last spring and grew considerably faster than they

did the first season. Now they are full of buds for bloom another season. Instead of being scraggy or ungainly they are quite symmetrical, as the new growth is straight and erect. I set several of the roots in the garden, and although the soil is quite dry and they have never been mulched yet they have grown faster than those in the specially prepared bed. Kalmia I have never tried to grow.

There are two more shrubs I have yet

to see in any garden except my own. The first, *Ilex verticillata*, is now exhibiting its wealth of scarlet berries and it seems to me I never saw them in such profusion before. The other, *Benzoin odoriferum*, is clothed in yellow just as its leaves are starting in the spring, and in its native state at least, is a beautiful thing. I have it growing finely on a dry bank although it loves to have its feet in or near the water. It has not yet bloomed for me, being set only last spring.



FRUIT OF AKEBIA QUINATA.

Lobelia cardinalis I grow, and it blooms in a frame in the garden. The frame is mainly intended to hold the mulching of leaves which I put into it. Here, again, the soil is quite dry and although the plant is only moderately vigorous yet the flower spikes are fine. I have several clumps of our native Highswamp huckleberry (*Vaccinium corymbosum*) and they are gorgeous for several weeks after frost in their coloring. *Clethra alniflora* I cannot induce to grow over 18 or 20 inches high, although in its wild state I see it 8 feet or more. It lasts in bloom for several weeks and is a mass of white.

I had 18 tea roses in the ground this summer that did remarkably well. I have just built a pen around them, about 18 inches high, which I propose to fill with leaves, putting in a part at a time as the weather grows cold, and cover with boards. This to see if they will live through the winter.

Azalea Vasey and *mollis* winter kill here with a heavy mulch. What more would you do for them?

Connecticut. JOHN E. PRIOR.

Kalmia as taken from the woods are hard to establish, but nursery grown plants move easily and generally succeed.

Azalea sinensis, commonly called *A. mollis*, is hardy at Rochester and Pittsburgh and has stood some winters at Chicago. Undoubtedly at the latter place it is better with some protection. I have

one group at Highland Park, Ill., now in good form, that has been protected for the past three winters by covering with boxes filled with dry oak leaves. The box should be nearly water-proof in order that the leaves may be kept dry. Without doubt *Rhododendron* (*Azalea*) *Vasey* could be covered the same way. Heavy mulching, especially when they get wet, excludes the air and some plants do not like it.

In the Botany of Cook County issued by the Chicago Academy of Science mention is made of one specimen of *Azalea nudiflora* being found by Professor Babcock near Lake Calumet. The plant was some five feet high and in a flourishing condition. It was destroyed afterwards to make room for some improvement.

W. C. E.

TREES AND SHRUBS WITH COLORED TWIGS.

The winter season is not at all a dreary one on the lawn to any one interested in trees and shrubs. Many trees, weepers for example, are often more to be admired when bereft of foliage than at any other time. The weeping dogwood is exceedingly beautiful then. But it is my intention to speak of the many trees and shrubs with colored twigs, which afford much pleasure in winter by the display they make.

I was reminded of this to-day when passing a clump of the *Cornus alba*. This is the common red-twigged dog-

wood, which just now seems almost ablaze, so deep red is the bark. To have the best display, cut the bushes down every spring, that a lot of young shoots may spring up, as the younger ones make the best display. By the way it does not seem to be generally known that this shrub takes on its deep red hue for winter, but it is a fact. When spring comes the red color almost disappears, to show itself again when winter returns, and this is the case, too, with many of the willows, to some extent.

And speaking of willows, when planting for color, do not overlook the *Britzensis*. It is well called flame willow. Some time ago, looking at a clump at some distance off, it looked like the color of a golden sunset, and I had to turn to look before being satisfied that it was not the sun shining on it.

The yellow twigged willow, *vitellina*, has long been a favorite one because of its beauty in winter. Among larger growing trees there is the golden-barked ash, the sorrell tree, *Andromeda arborea*, with deep red stems; the *Acer striatum*, with white and green stems, and the red-twigged cut leaved linden, a most beautiful variety indeed. And the white-barked birches show to great advantage in the winter season.

JOSEPH MEEHAN.

FLOW OF SAP IN TREES.

Does the sap ascend a tree in spring and return to the roots in the fall. People speak of the spring run of sap and an August run. I don't fully understand it. Please give me correct information.

H. P.

What is called the crude sap rises from the roots in spring, ascends to the leaves where it undergoes certain chemical changes, and becomes the true sap, which feeds the tree, enabling it to flourish. It does not wait until fall to descend, but commences its downward course almost as soon as the leaves are perfected in the spring. Neither does it all descend to the roots as your inquiry suggests you may suppose it does. It is deposited to every part of the tree on its descent including the root. This upward and downward flow is more pronounced in the early part of the season than in late summer. The girth of trees does not increase much after September, showing the downward flow is ceasing.

There is no such thing as an "August run" unless it may refer to the downward flow, which is sometimes quite pronounced in midsummer, as is shown by the swelling trunk at that time.

JOS. MEEHAN.

KEROSENE KILLING TREES.

One of my neighbors had some very handsome maple trees on his place, which for two summers had been infested by caterpillars. He put a good bunch of cotton around the trunks, but as this did not seem to do any good, he saturated the cotton with coal oil. In a few days he noticed that the leaves were curling up and turning brown. He called in two nurserymen to advise him but they could not tell what the trouble was. Every one of the trees died and I have heard of two similar cases. Above the cotton the wood and bark was black, while below the trunk appeared healthy. Was it the coal oil that killed the trees? H. A. B.

It was a mistake to put coal oil to the cotton. This is no doubt what killed the



SUB-TROPICAL EFFECT IN A NORTHERN GARDEN.

trees. The bark absorbed the oil, preventing the circulation of the sap and killing the trees. This is the probable explanation.

Crude coal oil has killed many a tree and plant. Diluted it is all right, and it enters in some shape into many compounds for destroying insects.

Next season should insects visit other trees, try spraying with some of the arsenical compounds. J. M.

THE JUNE BERRY.

The beauty of our woods in early spring when buds are bursting and flowers blooming, enchants us all, and especially strangers to the country, who happen to be there when the picture is to be seen. Very much of the pleasing display we owe to the amelanchier, which is commonly called June Berry, Service Berry, and Snowy Mespilus.

The exquisitely beautiful flowers, when set off by the bursting leaf buds, present a picture but few trees or shrubs can equal. Our eastern species differs from the western one. It grows to be a small tree, when grown to one stem, and to fifteen feet or more in height when in bush shape. In its wild state in woods and thickets, it can often be found twenty-five feet high. The blossoms are snow white, produced in drooping racemes and generally in the greatest abundance. When grown singly, as a large bush on a lawn, it makes a beautiful display when in bloom.

Following the flowers are the berries, which very soon attain full size, which is about the size of currants, and which ripen in June. They are dark red in color and hang in small clusters, as currants do. They are very good eating, either as they are gathered or with the addition of cream and sugar.

This species is the *Amelanchier canadensis*. The western folks have a dwarf one, *A. alnifolia*, which they are growing for its fruit and well it deserves to be. It is

a surprise to many who know but the one species to find there is another, and such a different one. The dwarf one can be planted where currants can, as it will occupy no more room. It got fairly well distributed some years ago by one who advertised it as the blueberry. Now the blueberry is a *vaccinium*, while our June berry belongs to the order *rosaceæ*, in which are hawthorns, almonds, cherries, etc. Still he distributed a very good thing, if not a blueberry.

About Philadelphia, the native sort has been transplanted to many gardens, where it is much valued, both for its flowers and its fruit.

Philadelphia. JOSEPH MEEHAN.

HYDRANGEA PANICULATA.

Most every one knows and admires the now common *Hydrangea paniculata grandiflora* with its large heads of white flowers, changing to pink as they grow old. The habit of this plant is that when the blooms are all open, they are so heavy they bend down and give the bush a weeping form. In the "single flowered" *Hydrangea paniculata* the bloom heads are upright, forming a long tapering spike of white flowers which remain upright and last in bloom longer than the variety *grandiflora*, and is its superior as a specimen shrub on the lawn. It is as easily propagated and an elegant shrub which when better known will be more extensively planted.

Davenport, Ia. J. T. T.

The Flower Garden.

FRUIT OF THE AKEBIA QUINATA.

This useful Japanese twiner is enjoying the popularity it justly deserves, and is now grown by many. While the matured vines flower quite freely in all parts of the country, one bearing fruit is seldom seen.

Age and conditions seem to have no bearing upon the question, it apparently depending more upon the individual characteristics of the plant. Here and there some one plant is found that fruits, and layered plants from these are certain to produce fruiting vines. It is said that these can all be traced to one old vine on Long Island, in which section they are not uncommon.

The illustration here given is from a photograph furnished by Mr. H. Hicks, of Westbury, L. I.

There are two vines near Chicago that bear fruit, both being planted in rather exposed situations and in a harsher climate than their eastern parents, proving that to a limited extent climatic conditions have no bearing upon the subject. The beauty and utility of this vine is well shown in the issue of GARDENING of September 1, 1895.

SUB-TROPICAL EFFECTS.

We of the north need not be without the charming effects produced by the rampant foliage of the more southern zones. There are some trees and shrubs hardy with protection and some without, that reinforced by easily grown annuals, readily produce an abundance of leafage diversified in form and withal sub-tropical in effect.

In the group here illustrated the *Ailanthus glandulosa* and the catalpas are cut back each year, while the *Paulownia imperialis* is wrapped in straw each winter as far up as I desire to save it. Beyond the wrapping it freezes. Vigorous yearly shoots will grow fully ten feet, producing immense heart-shaped leaves. With the exception of the rhododendron, which is housed in winter, all the other shrubs and trees are hardy.

The material mainly used, beginning at the right is *Sambucus nigra var. aurea*, which is headed in quite severely each spring to make it more dense; then comes the African castor bean plant *Ricinus*

zanzibarensis, followed by *R. cambodgensis*. Back of these, and shown more clearly from other points of view are *Aralia spinosa*, our native angelica tree, and its much finer Japanese relative *Acanthopanax ricinifolium*, sometimes catalogued as *Aralia Maximowiczii*. With these are the catalpas and the ailantus.

The large-leaved tree to the left of the centre is the paulownia, next to which is a clump of the hardy *Eulalia Japonica striata*, partially hiding a large rhododendron, "The Queen." W. C. EGAN.

Highland Park, Ill.

CHINA ASTERS.

Mr. James Semple of Bellevue, Pa., has long been noted as one of the most successful growers of the China aster, and as the originator of improved varieties. By his simple method of culture he has been able to overcome their tendency to disease and to produce plants over five feet in height with main stems an inch in thickness and blooms fully five inches in diameter. The flowers in the vases here illustrated speak for themselves, showing their whorled centres, a feature typical of Mr. Semple's strain. They are produced

place by themselves and transplanted into rows eighteen inches apart and fifteen to eighteen inches asunder in the rows, with a space of three feet at every fourth row.

Mr. Semple sows a few inside in the third week of March, afterwards growing them outside, but the gain in time of blooming is only about five days; these asters being a late variety, they do not bloom in ordinary seasons until about the twentieth of August. By growing them in the greenhouse continuously, one can have them in bloom about two weeks earlier.

In reference to diseases of the aster, Mr. Semple is unable to speak from personal experience as to causes and cures, for he has had so little disease in all the years he has devoted to their improvement, that he has never had occasion to look up or use a remedy; he thoroughly believes that to the use of the lime, in the condition and applied in the manner recommended, his freedom from aster diseases is attributable; his belief is, that the gases developed from the lime prevent fungous and other diseases; that this view is correct seems to be assured, for he has

is good to keep cannas in. Too warm a cellar will dry them out, and too much dampness may produce decay. Some varieties, notably Madame Crozy, is very easy to keep, while some others dry out easily.

If your cannas were taken up without much soil and your cellar either quite warm or so cold that it would be a question if potatoes would not freeze there, put your cannas in boxes or barrels and cover with dry sawdust, but examine them occasionally during the winter and if decay shows itself, cut it out. The sawdust keeps the dry air away, also the light frosts.

VASE OF HARDY FLOWERS AND FOLIAGE.

Here we have a comely combination of hardy plants—flowers and foliage—the fleecy pink wands of the African tamarix, the white, fragrant Florentine iris, and young, leafy sprays of the crimson leaved Japanese maple.

The tamarisk is in fine bloom near the end of May and the iris at the same time. This iris is one of the handsomest and boldest of early blooming kinds and per-



TWO VASES OF ASTERS GROWN BY MR. SEMPLE.

in but three colors, viz.: white, pink and lavender. His mode of culture is as follows:

For soil he uses a light loam, and is very particular that no horse manure is used, not even a shovelful of it, but, if the soil should require enriching, a very small quantity of two-year-old cow manure proves beneficial. He manures in the spring with a small quantity of crushed unslacked lime, about twenty-five bushels to the acre, spread over the field so that it will receive the full benefit of the gases generated when it is turned under, and puts it on in this way, spreads the lime on in small quantities just ahead of the plow, plowing it under immediately, thus insuring its being covered up without delay, and preventing exposure to the atmosphere.

Sow the seed outside as soon as possible after April 12 (in his latitude) for the main crop, sowing in drills about one inch deep, covering the seed with good potting soil. This sowing is done in a

grown asters for five successive years in the same place and same soil with entire freedom from disease, and only treating the ground in the way described.

Where his main crop is grown (he had this season three large fields in asters, besides some smaller lots) it is a light, loamy, black walnut soil, and is the finest he has ever tried for them.

KEEPING CANNA ROOTS OVER WINTER.

Please tell me the best way to keep canna roots over winter. How can I keep them from drying out? G. W. V. New York.

When the cannas are taken up in the fall, as much soil as possible should be allowed to adhere to the roots. The presence of the soil in among the tubers prevents undue evaporation of the juices. They should be kept in a cool frost proof cellar. Any place that will keep potatoes

fectly hardy; its white flowers have a tinge of blue in them, and they are fragrant. Indeed, the rhizomes of this plant are used in the manufacture of some kinds of perfumery. It is well worth growing for cutting, but like most all other irises its blossoms last for only one day. And in the way of irises don't miss *I. pallida*, blue, and one of the largest and finest of all as well as the thriftiest of the rhizomatous sorts. But the ephemeral nature of iris blossoms will always be a barrier to their popularity as cut flowers except for home use or immediate want.

The foliage of the Japanese maples, however, is very suggestive. Leafy sprays of these elegant maples have a fine effect when used with cut flowers and they are much esteemed by refined people. These maples—the polymorphum, not the Japonica section—are shrubs only with us, but they are of a dense branching nature and very leafy, and according to variety the foliage is large or small, broad or narrow, simply palmate or



VASE OF HARDY FLOWERS AND FOLIAGE.

exceedingly finely cut, and in color may be plain green or deep crimson or variegated, and the coloring always is deepest in spring. The typical kind is raised from seed, and the varieties are "worked" or all may be easily raised from layers. The Japanese maples are among the loveliest hardy shrubs we have got, and root well and transplant well; indeed, I never hesitate to transplant large specimens in full leaf in summer short distances, providing

I can carry the full ball of earth and roots and give them a barrel of water after planting them. But while young plants are very beautiful, old specimens take the Japanese "dieback" and whole limbs will die out here and there all among the plants in summer. But don't let this deter you from planting Japanese maples. We can enjoy beauty and refinement undisturbed for a dozen years, may be twenty.

W.

HESPERIS MATRONALIS, FL. PL.

I have written to every American establishment that grows perennials in an attempt to secure the above. I have single ones but want the double form. Will you tell me where I can get the plants, and if this is not possible, can the plants be easily raised from seed?

L. B.

You cannot obtain it from seeds, and we

do not know who in the country has got it for sale. Although an exceedingly desirable hardy plant it is a very scarce one with us.

GROWING TENDER BULBS IN COLD FRAMES.

A good many bulbs that are not quite hardy in our northern states can be very successfully grown in cold frames with little trouble. To prepare a frame for bulbs it has to be dug out at least fifteen inches and a box made of boards, having

Amongst the many bulbs that need the protection of a frame, the calochortus is one of the showiest; the markings in the flowers are truly grand; amongst some of them that we have planted are *C. venustus roseus*, *C. v. oculatus*, *C. v. citrinus*, *C. v. purpurascens*, etc. The babianas are another class of rich colored flowering bulbous plants from the Cape of Good Hope. The markings of the flowers, like the calochortus, are very fine. The same can be said of the ixias, and how nice they are for cutting! The

ject is to keep them so dry as to thoroughly ripen the roots, and prevent them from starting into growth before spring. These irises are mostly natives of Palestine and imported into this country in the fall with other bulbous stock; but few of our seedsmen catalogue them; Henderson, of New York, is the only one I know of and he has only two varieties of them, Lorteti and Susiana, but these are two of the best, and Susiana is the easiest of all to grow. To have a variety of them an order should be given in the spring so your seedsman can order them with the rest of his bulbous stock.

This iris stands quite a little frost, but it is best to bank around the frame with some manure the same as with the other tender bulbs and have some covering to go over the frame on cold nights. It is well to have the frame prepared for these irises some time before planting and the sash put on; in this way the soil will get dry and they won't be so liable to start to grow or spring. They should be planted about two inches deep and covered with dry sandy soil.

Amongst the varieties there are Lorteti, Susiana, Bismarckiana, iberica, flavissima, lupina, and a number of others.

Mahwah, N. J. DAVID FRASER.

THE HERBACEOUS GARDEN, LINCOLN PARK, CHICAGO.

No lover of nature can look on this illustration of the perennial garden in Lincoln Park, and not admire the quiet and peaceful scene before them. It is an admirable lesson, showing that a heavy border of trees banked up by a judicious selection of shrubs, fringed with herbaceous perennials and facing an open lawn, is a most pleasing feature in park adornment.

This beauty spot was the creation of Mr. J. A. Pettigrew when superintendent, and here he always brought his interested friends, where with lingering steps and eager interest the merits and demerits of species were discussed. It was in this part of the park Mr. George Nicholson, curator of the Botanical Gardens at Kew, England, was most interested while here in 1893, as in it are to be found numerous species that adorn the English gardens. Here also can be seen nearly all of our native wild flowers, where cultivation has increased their vigor and generally enlarged their flowers; where the "weeds" of the roadside become the "pets" of the garden; a weed after all is only a plant occupying a forbidden place.

As can be seen there is a long lane of lawn, bordered on either side by flower and shrubby beds. The irregular outlines of the margins relieve the eye of any monotony, and form bays and promontories, nooks and recesses, and all the charming variations found in woodland borders.

In the main only hardy perennials are used, but here and there such bold tender plants as *ricinus*, *solanums* and *daturas* are placed to give character to the surroundings. While the casual observer obtains enjoyment from the glaring colors of the clipped and formal beds facing the palm house, the true admirer of plants finds in the garden the varied interest that characterizes a choice collection of perennials. In marked contrast to the mechanical grouping of color beds, which change not with the advancing season, but remain the same day in and day out until destroyed by frost, the interest here is ever varying as each species reaches its time of flowering.

While carpet bedding is essential in all large parks, as there are a great many



THE CHEROKEE ROSE.

the sides come up level with the ground. Coal ashes or small stones can be put in the bottom for drainage and the bottom boards put in. But be sure there are no holes large enough for mice or moles to get in or all your work will be in vain.

If the soil is heavy a lot of coarse sand and leaf soil can be mixed with it, some old mushroom manure could be used also, but avoid putting in any rank manure as the bulbs may come in contact with it and it is liable to rot them.

The box should be made the same size as the frame that is to be put over it. By such an arrangement the frame can be taken off the box in the spring when all danger of frost is over. In this way you will have a nice bed of tender bulbs, which you do not often see.

brodiaeas, *sparaxis*, *tritonias*, *ranunculus*, *lachenalias* and some of the tenderest *anemones* all do nicely in such a frame, and well repay any extra labor that may be given them.

There is another class of plants that do well in such a frame and that is the *onocylus* irises. These should be more largely grown in this country, as they are the most beautiful flowered varieties of all the iris family. The main point to be observed in their culture is to give them a long season of rest after flowering, which is in May and June. The sash should be put on the frames as soon as the plants are through flowering, tilting the sash at the back to give plenty of air, and in this way kept all summer so not a drop of water gets near them. The ob-



VIEW IN THE HERBACEOUS GARDEN, LINCOLN PARK, CHICAGO.

people who admire them, and it is the people who are taxed for their maintenance, the designs should be limited to geometrical figures, and no attempt made to produce representations of animate objects. Such attempts are not in taste and are always objects of ridicule. These formal beds being necessary should not be scattered here and there, but confined, as one sees them in the wilds, and in some quiet nook away from the public road. In just such a place as Mr. Pettigrew chose should be the perennial border.

TAMARIX AMURENSIS.

A good old shrub is the *Tamarix amurensis*. The leaves are small on long wirey stems, and surmounted with long sprays of light pink blooms. It was introduced from Russia and has proved perfectly hardy here while *T. gallica* and *T. indica* freeze down to the ground most every winter. With its small light green foliage and rose-colored flowers blooming in midsummer it is an ideal elegant shrub.

Davenport, Ia.

J. T. T.

ONE BULB OF *LILIUM AURATUM* was planted several years ago in a hole not over six inches in diameter, cut in the sod and clay loam, within one foot of a cellar wall. It has ever since shown every evidence of perfect health but not the robustness some specimen have been known to exhibit. Each year it sends up two stems about three feet high bearing each four or five good-sized flowers. It retains

its foliage down to the ground until quite late, never turning yellow. For the last two years it has sent up its flowering stems outside the original hole, through the clay loam and sod. Near it in summer is placed a large tub of Zanzibar water lilies, which overflows quite often in the early summer, part of the overflow reaching the *L. auratum*. This abundance of moisture during the growing season, with the quick drainage afforded by the cellar wall, may be the secret of success with this most fastidious lily.

Roses.

SINGLE ROSES.

So many readers of GARDENING seem to appreciate *Rosa setigera*, *R. Wichuriana* and other single roses that I am wondering why my favorite the single white Cherokee rose does not come in for a share of their praise.

Because its roots are so strong and its growth so rich must it be termed "rank"? And where among single roses will you find handsomer leaves and flowers? Here we need just a such luxuriant, quick-climbing rose to shade porches and verandas from hot southern suns, yet so often I see the Cherokee's vigorous root supporting roses not half so beautiful as its own and for years have seen no mention of it in any horticultural journal.

On the walls of northern greenhouses I have occasionally seen the Cherokee climbing and blooming gloriously as if trying to make the most of the old proverb about a prophet without honor. Its great single flowers have the rich waxen whiteness of a magnolia cup, and for a

part of summer, the plant is one drift of them.

Another pretty little single rose that I have found brilliantly beautiful for bedding is Madame Eugene Resal, a true "daily," or Bengal rose, of the favorite Hermosa type. Its flowers are very light and airy looking, but you do not half appreciate their beauty until you see a whole bed of them open at once. The growth is low and spreading and the bloom very free and constant, keeping the bed one even, continual wave of carmine rose, coppery red and yellow tints. The long fragrant buds are lovely.

North Carolina.

L. GREENLEE.

FIFTEEN CHOICE ROSES

George Bancroft, the historian, was a great lover of roses and had several thousands of fine plants on his estate at Newport, R. I. In a letter to a friend, he gave the following varieties as his favorites: Mme. Gabriel Luizet, La France, Etienne Levet, Baroness Rothschild, Alfred Colomb, A. K. Williams, Duchess of Edinburgh, Capt. Christy Mme, Victor Verdier, Marquis de Castellane, Pierre Notting, Marie Baumann, Ulrich Brunner, Mrs. John Laing and Jean Liabaud.

NEXT to Clothilde Soupert the old rose Caroline Marniesse was the best all summer bloomer in the garden. Even in the hottest weather it produced its double white fair-sized flowers that remained either on the bush or when cut in good condition a long time. It is one of those old roses that seemed set aside to make room for the newer productions, having been introduced in 1848. It is a Noisette, rather dwarf and quite hardy. It should be grown more extensively as a garden rose.

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of you flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE arrangement of flowers to secure the best possible effect is an art and one worthy the study of any person of refinement. Carry the beauty and fragrance of the garden into the house, but study the composition of your floral effects as an artist would.

A WRITER in an English journal states that the new form of *Rosa rugosa* known as *R. rugosa calocarpa* colors most beautifully in the fall, the leafage being a bronzy-crimson gradually turning to a clear yellow-orange and crimson. There is room in this country for more hardy roses of this character.

IPOMEA "HEAVENLY BLUE," while still in pots before planting out time, gave a few flowers of more than usual beauty. When planted out in good soil, they spent all summer in producing vines and were caught by the early fall frosts still making growth, but no flowers. A visitor stated that she had had it in bloom nearly all summer in a window box. This would seem to prove that it requires either poor soil or root restriction to flower well in our northern climate.

BUHACH POWDER.—Replying to E. V. C. Buhach powder is an insecticide made from pyrethrum flowers. It can be had at most any drug store.

ABUTILON SOUV. DE BONN proves to be a good summer bedder, its variegations standing the hot sun well. Used as an edging to a large bed of the canna Egandale the effect was fine.

THE variegated tobacco plant, sent out as *Nicotiana glauca variegata*, needs further selection, as only a small percentage of the seedlings showed the white markings. It possesses the merit of not burning in the sun and can be used with effect in sub-tropical gardening. It flowers freely, producing a dull pink cluster not over attractive.

AMONG the novelties of this year appeared the dwarf form of Lobbs' nasturtium. There is still room for improvement, as some of the plants ran largely to leafage. Others, undergoing the same method of culture, flowered freely above the foliage, and made handsome compact plants, some nine inches high and twelve broad. There is opportunity for the specialist with this plant. Should it be so improved that the best forms can be retained, it can be largely used in ribbon borders.

A GENTLEMAN who is well known for his successful business career was looking about for an undeveloped country home and had several places offered him. His business training had taught him that there must be specialists in all lines, and that for a moderate sum he could buy the results of their experience. He wisely secured the services of a competent landscape engineer who examined the places offered him, reported the capabilities of each, and enabled him to make an intelligent selection.

IN JAPAN there is a tradition regarding the Indian Saint Daruma, who is represented in Japanese art as sitting, a monument of patience, with his hands in his sleeves. He is called the father of the tea plant. After years of sleepless watching and prayer he suddenly got drowsy and at last his eyelids closed and he peacefully slept. When he awoke he was so ashamed of this pardonable weakness that he cut off the offending eyelids and threw them on the ground. They took root, sprouted, and grew into a shrub whose leaves now produces our tea, that ever since has a tendency to keep the world awake.

THE CHINA ASTER of our gardens is botanically speaking not an aster, but the *Callistephus chinensis*, and has been known in its original form since 1731. The type bore dark purple flowers, and received its name from "Kallistos," most beautiful, and "stephos," a crown, in allusion to the appendages on the ripe fruit. It is strictly an annual indigenous to China and is represented by only one known species. The true aster received its name from the resemblance of the flowers of some species to a star. While the greater number of species are found in North America, the old world has its quota.

NOTES IN JAPAN.

Alfred Parsons' "Notes in Japan" gives many interesting facts concerning the flora of that country. In the parks at Nara "were scentless violets, some yellow and white dandelions, etc." In speaking of the cherry blossoms of the Yoshino grove he states that the colors vary from

white to crimson and mentions a double blossom of a "pale yellow with a pink flush on the outer petals, like a delicate pink rose."

He writes: "A little damp gulley just behind the bamboo, was full of deutzia bushes in bloom, and under them grew a clump of pale pink lilies (*Lilium Krameri*) which seemed to me the loveliest flower I had ever seen." "The lily is not one of the flowers the Japanese themselves particularly admire, nor do they use it in their decorations." He mentions a native artist, eminent in his profession, who characterized one of their lilies as "foolish flowers" because its flower stems were bare of leaves.

He states that the *Lilium auratum* is a common wild flower, and its bulbs boiled in sugar is a favorite vegetable. Other lily bulbs are used as food. Among dishes that seem odd to us are "young bamboo shoots," also chrysanthemum leaves fried in batter. The eulalias grow in open flat spaces on the hillsides. He mentions one place "where there were abundant wild flowers, purple iris, white and mauve funkias, yellow orchids, clusters of white roses, hydrangeas, St. Johns wort, meadow rue and bocconia appearing here and there half hidden among rank herbage."

In describing his ascent of the Fujisan he writes: "When all cultivation had disappeared and the road was a mere cinder track over a moorland of ashes, the flowers and bushes still grew in clusters here and there. The most abundant plant was a bushy knotweed covered with sprays of white blossoms, and this grew far up the mountain side. There were also tall clumps of bocconia, a campanula with large pink or lavender flowers sprinkled in each bell with tiny ink spots, and some less showy flowers."

"The cottages in the country round Kamakura are thickly thatched and on top of the thatch is laid a mass of earth held together by iris plants, which form a roof crust of spiky green."

There are several versions of what the Japanese term the seven beautiful flowers of late summer, the ones given him being as follows: "Convolvulus, wild chrysanthemums, yellow valerian, lespedeza, *Platycodon grandiflora*, *Eulalia Japonica*, and a rather insignificant aster." Sometimes the large flowered hibiscus is substituted for the aster.

In speaking of Japanese gardens he says: "The gardens of the tea-houses and temples were gay with azaleas, camellias, magnolias and cherry blossoms, and with the young leaves of maples and andromeda, as bright as any flower. The cherry trees and magnolias are let grow as they choose, but the others are trimmed into more or less formal shapes considered suitable to the species or helping the carefully studied arrangement of forms which is the ideal of a Japanese gardener. There are no beds for flowers. In the little ponds the iris and lotus bloom and in odd corners there may be a clump of lilies, chrysanthemums or other plants, but these are more accidental. The designer's aim is a composition of rocks, shrubs, stone lanterns, ponds and bridges, which will look the same in general features all the year round, and conform to established rules."

"One of my Japanese friends told me of an instance of the complexity of the landscape gardener's art that if a certain shrub was used, it would be necessary to place near it a stone from Tosa, the distant province where it commonly grows."

"The decorative garden is quite distinct from the flower garden, where the fine



VIEW IN ONE OF THE LARGER GARDENS IN JAPAN

varieties of irises, pæonies and chrysanthemums, for which Japan is famous, are grown by Japanese florists or by rich amateurs who can devote a special place to their culture."

The Fruit Garden.

CHERRIES AND PEACHES.

Cherries are divided into three classes, Hearts, Bigarreus and Tarts. The two first named are hard to tell apart nowadays. Both are sweet cherries. The difference consists in the Heart section being considered of slightly less firmness of flesh than Bigarreus possess.

A few of the best of the Heart class would be Black Tartarian, Early Purple, Guigne, Gov. Wood, Coe's Transparent and Elton. Of these the Early Purple is very early. I have gathered the finest early in June.

Of the Bigarreus, Napoleon, Windsor and Red Jacket are three of the best. The last named is a very late one.

Tart cherries, which take in Dukes and Morellos are very useful ones as they are good either for eating fresh or for preserving. Some of the best of these are May Duke, Late Duke, Early Richmond and English and Kentish Morello.

The Dukes occupy a place between the Morellos and the sweet cherries. While possessing some of the tartness of the Morello they are tempered with enough sweetness to make the fruit very good

eating from the tree. May Duke does not ripen here until June. Late Duke can sometimes be had in the middle of July and later.

The Early Richmond is what is known hereabouts as a pie cherry. It is an early and abundant bearer, and robins do not exact such tribute from it as they do from the sweet kinds. Kentish Morello is thought to be hardly as good in the way of prolific bearing, though it is a good deal planted. English Morello would be more plentiful were it better known. It bears fine, large black fruit, ripens late and keeps good on the trees a long time. It is very tart indeed, though not at all bad eating when fully ripe, and all other cherries are over. I think cherries do best when planted the first thing in spring, before the buds begin to swell.

The gardens of amateurs are usually in such good condition and are so well looked after that peach trees do remarkably well in them. We all like early fruits, peaches not excepted, but the fact is that the very early peaches are not satisfactory to the extent later ones are. The fruit is smaller than those which come later. Starting from the earliest to ripen, say from July to October, one might almost make ten divisions of the ripening period.

Naming two sorts for each period, I will give the following list of worthy sorts, starting from the earliest: Wilder, Waterloo, Alexander, Amsden, Early Rivers, Mountain Rose, Crawford's Early, Troth's Early, Oldmixon, Stump the World, Susquehanna, Reeve's Favorite, Elberta, Crawford's late, Heath Cling,

Globe, Chair's Choice, Salway, Bilyen's Comet and Mrs. Brett. This is about as they ripen here and a little to the south of us. It might be that some of our October peaches, which would embrace say the six named last, might not ripen well north of this.

The planters here much prefer to set their peach trees in the spring. The trees should have close pruning at the time, and a little annual pruning afterwards as they grow, to keep them in good shape.

Philadelphia.

JOSEPH MEEHAN.

BERRIES.

The berry garden should be decided upon now. Mature plans for the season, select your plants, order them early; and let this be your first work in the spring.

One quarter acre of good land, set with proper varieties and well cultivated, should produce from twenty to forty bushels of nice berries every season. This would give an ordinary family fresh berries every day in season and a liberal supply, canned, preserved or dried during the entire year.

Plants for such a garden may be purchased direct from a reliable grower, for ten or fifteen dollars, and should include the following varieties: 300 strawberry plants, early, medium and late; 100 blackberry plants, early and late; 50 black raspberry, early and late; 50 red raspberry plants, early and late; 75 currants, red and white, early and late; 25 gooseberry, early and late; 18 grapes, three varieties, early.

Good berries may be grown on any soil, sand, clay, muck, loam, gravel or a combination of each, provided the same be highly fertilized, well drained and thoroughly cultivated.

Early fruits are usually most desirable and light soils with southern exposure are best adapted for that purpose. Light soils however, require heavy fertilizing, more mulch in summer, are more liable to injury by drouth and produce lighter crops. Clay soil must be well drained, is more difficult to prepare, mature later crops and not so favorable for winter protection.

The ideal berry ground would be, 1st, a rich sandy loam with clay subsoil. 2nd, a dark loam or gravelly loam mixed slightly with clay, and a clay subsoil, all having a southerly or eastern slope. Any of these mixed soils, will make good berry gardens by applying good barn yard manure, which contains all the essential elements required. When such manure cannot be obtained then commercial fertilizers rich in nitrogen and potash should be applied.

Avoid low flat land unless under-drained, it is usually cold, late and more subject to frosts. Avoid steep hillsides as being more subject to drouth and wash of soil by severe rains. M. A. THAYER.

Mushrooms.

GROWING MUSHROOMS.

J. B. H., Brooklyn, N. Y., asks: Question No. 1.—It is sometimes said that mushroom raising is a difficult art requiring long experience, and the crop an uncertain one. Is this your view?

Ans.—Any one of intelligence can raise mushrooms, at the same time it is an uncertain job. Beginners often have as good success as old practitioners.

Ques. No. 2.—What are the principal causes of failure, and why, in your opinion, is the industry not oftener followed?

Ans. Poor materials, poor quarters, neglect. Faint heart. Also lack of application and personal interest. It is a crop that one's soul and hands must enter into; dawdling won't grow mushrooms.

Ques. No. 3.—What was the average wholesale price of mushrooms last season, and do you anticipate much change in the price during the next few years?

Ans.—Don't know. Consult a wholesale commission merchant in the New York market.

Ques. No. 4.—What would be a rough estimate of the cost, per square foot of bed, of the manure and labor, and gathering and marketing the crop?

Ans.—Can't tell, so much depends on the man employed. In order to grow mushrooms successfully one must put his own hands as well as his heart and pocket to the wheel. Manure is always a local question.

Ques. No. 5.—Given intelligent management and some little experience (that of a year or two for instance) what weight of marketable mushrooms per square foot of bed, might be reasonably counted on?

Ans.—Three-fifths of a pound.

Ques. No. 6.—What kind of building is in your opinion the best for a mushroom house, and failing that, what structure would you recommend on the score of economy? Would it be practicable and economical for a beginner to hire a florist's greenhouse in preference to building?

Ans.—A close wooden shed, dark, low, and perfectly dry and free from draught is the cheaper and as good as any. But any building, pit or cellar can be made to answer.

Ques. No. 7.—How much capital would be necessary to start in a small way?

Ans.—That depends upon the person going into the business. If he intends hiring the work done, my advice is go slow, but if he is to do the work himself \$500 should give a fellow a nice start.

Ques. No. 8.—In short how would you advise a beginner to proceed, desirous of starting in a somewhat tentative manner at first?

Ans.—Get his coat and vest, collar and tie off, then on with his overalls and go right into the manure and dirt with his own hands and stick to it without a growl or a let up every day for four months, then he'll have a better idea of things than any outsider can give him. Personal application means success.

WM. FALCONER.

MUSHROOMS IN A BASEMENT.

I have bought the book "Mushrooms and How to Grow Them" with a view to growing some in my basement. I wish to ask if it is absolutely necessary to use manure? I propose to grow them in a bed made on a concrete floor. The furnace is in an adjoining room and I can keep the temperature anywhere from 40° to 60°. I can use manure if it is actually necessary but do not care to bring it into the house if I can get good results without it. The soil I shall use is fine loam with well rotted cow manure which has been "turned over" about two years. How many bricks of spawn must I buy for a bed 9 by 4 feet and how deep shall I make the bed if I use no manure?

C. S. S.

Loam alone or loam in which some old cow manure has been mixed may grow mushrooms, but if you want a good crop of them you had better come right down to orthodox principles and use well prepared manure. If the manure has been well prepared beforehand and brought into the cellar just when fit to be built into beds it won't be objectionable. Go by the teachings of that book, it is made up of practical facts. Four bricks might do, but better get five.

DISEASED MUSHROOMS.

I send a small box of mushrooms that seem rather curious to me, as they grow up in a clump and had no frill on them;

they looked to me as though they were not wholesome, but I tried a few and they tasted all right. Will you give me your opinion as to what is the matter with them. These are the only ones on the bed of this sort.

D. F.
New Jersey.

It is a genuine case of "Flock." This is caused by another fungus parasitic in the gills of the mushroom. It never occurs in great quantity, only here and there in a bed, and often not at all. Discard all such diseased mushrooms, for if they didn't kill you when you ate them, they mightn't act so pleasantly with every one else; they are regarded as unfit for food.

Miscellaneous.

OUR NATION'S FLOWER.

The final selection of a national flower is still before the people of America. Societies especially formed for this purpose alone have been in active service for some time, and the question has even entered the domain of patriotic bodies and received their deliberate discussions. It is a question that will remain before the public in a mild or violent form until some action is taken that will forever settle it. It is well therefore that the attention of the readers of GARDENING be called to the matter, as they may be interested in the final decision.

Many species have their champions, some chosen after due thought, and others sanctioned because of some passing fancy. In the patriotic societies flowers connected in some way with historic events naturally suggest themselves, and in one case an over enthusiastic society, a chapter of The Daughters of The American Revolution, has chosen the trailing arbutus, and has passed resolutions petitioning members of Congress from its state to urge the passage of a bill naming that flower as an emblem of our country. They cite fourteen reasons, the strongest of which are: First, it was the first flower seen by the patriots at Valley Forge after their terrible martyrdom; next, it was the first American flower seen by the Pilgrims of New England, who called it the Mayflower after their vessel; for number seven it asserts that its habitat is the thirteen original states; reason number nine states that there is but one species, which is an error according to Nicholson, who mentions *Epigaea*

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Asiatica from Japan; number twelve is that it loves liberty and resists cultivation.

Before discussing any of the above reasons, let us take the flower itself and see in what position it stands in the consideration of the botanists and of the people. It is a well known fact that it is the endeavor of the botanist in describing a new genus or species to choose a name that will in a measure identify or describe some striking peculiarity of the plant. In choosing the nation's flower this feature should be considered, as a characteristic so strong in a plant that it suggests its botanical appellation must have some influence upon the sentimental views in which it is held. Let us see how the trailing arbutus stands this test? Its generic name is derived from two words: *epi*, signifying upon, and *ga*, the earth, and the specific name, *repens* means crawling; thus the full meaning of the botanical term is in plain English "crawling upon the earth." Surely we cannot inscribe that motto upon our banner. Is this most prominent feature of the plant, a feature so prominent as to suggest its name, typical of the American people?

In what estimation is it held by the people? This can almost be answered by the interrogative how many know and have seen the plant? Rerson number seven explains that its habitat is the thirteen original states, and number twelve, that it resists cultivation, both of which mean that its presence is confined by nature and innate peculiarities to a small portion of our country. The American people living outside this baker's dozen of states would have to teach their children to love and revere a flower, that to them exists only in their imagination; they would be deprived of seeing and knowing that flower which should be the dearest of all to their hearts. We want a flower as common all over the country as a way-side weed, one that our children can see and know, as they now see and know the stars and stripes. We do not want to have to hunt up botanical collections or pore over musty herbariums when interesting the coming generations in our national emblem.

The golden rod naturally has many advocates, but here again the botanical name of one of the species interferes. It so happened that one of the commonest forms, and probably one that on patriotic occasions would be more used by the people than any other, was described from a plant found in Canada and christened *Solidago canadensis*. As much as

[CONCLUDED PAGE 110.]

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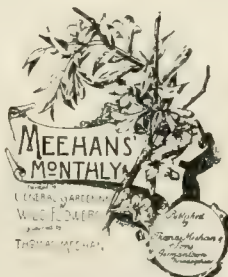
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we love our northern neighbor we cannot choose a flower bearing her name.

The columbine is the favorite of some, and as its generic name, *aquilegia*, signifies the resemblance to an eagle, which is the emblematic bird of our country, save on Thanksgiving, it presents a case where the botanical signification pleads for its adoption, but the question arises is it a typical American plant? Out of seventeen species described in Nicholson's Dictionary of Gardening thirteen are from the old world and only four are indigenous to the United States. The American species as a whole are not as vigorous and lasting in our gardens as some European forms, and therefore the most common form grown and the most likely to be seen would be *A. vulgaris*, or its varieties, which is an English plant. Here we are blocked again. We gained our freedom from England, but we must choose our emblem elsewhere.

We must not knock down idols and not produce substitutes. Let us consider the humble sunflower. Who has not seen it! Who does not know some form of it! Its generic name *Helianthus* is from *Helios*, the sun, and *anthos*, a flower. What brighter, more glorious emblem could we choose than that flower, that in itself suggests the orb that controls our destinies! As the sun rises in the east and pursues his course towards the west, so did our civilization in its onward march from Plymouth Rock to the Pacific coast. In mythology the sunflower is the symbol of fidelity—constancy—and with it is connected the hopeless love of Clytie for the god Helios. These two words, fidelity, constancy, are surely suitable ones to be connected with our national flower.

The helianthus is not, as is the trailing arbutus, confined to a limited area, but is found everywhere. It does not resist cultivation, but thrives under almost any condition and holds up its head as proudly in the back yards of the poor as in the gardens of the rich. It does not trail upon the ground but boldly stands erect and faces the sun from morn to eve.

Is it a typical American plant? Yes! Nearly all the known species are indigenous to North America, the few exceptions being confined to Peru and Chili, countries of the new world.

As our country is the Mecca of the oppressed, so has this humble plant in its own way contributed to the necessities of the poor, for one of the forms of a western annual species has long been grown in Russia for food and oil, having been originally grown from American seed.

There is another question that might be discussed, although its bearing upon the subject is remote. That is, how well will the chosen flower lend itself to its reproduction by the artist. Occasions will occur when artistic reproductions are necessary. The golden rod, while graceful in itself is so minute in its parts as to render it difficult of a pleasing reproduction. The columbine is easily copied, but the sunflower can be reproduced on more decorative lines than almost any other, especially adapting itself to conventional forms.

W. C. EGAN.

CROTOLARIA RETUSA.

I find this to be a good greenhouse plant, blooming steadily, each stem having from five to eight flowers open at a time. The flowers are of good size and bright color. I think it will be very useful as a cut flower. The more I see of it the better I like it.

HAROLD OTTER.

Philadelphia.

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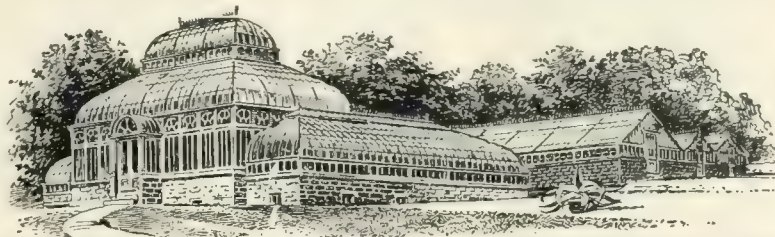
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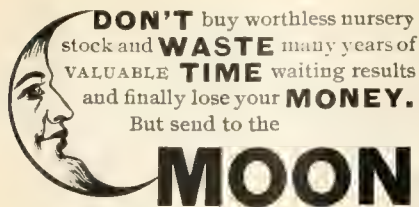
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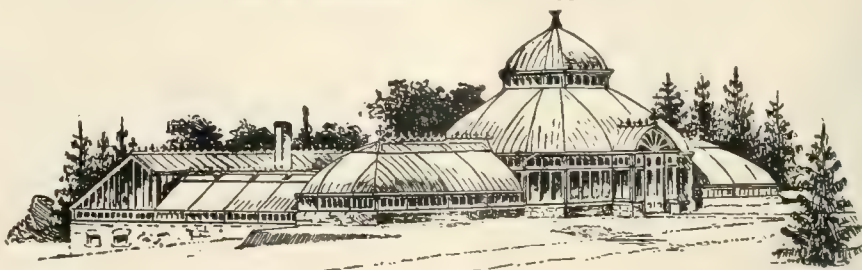
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WATER LILY POND ON THE GROUNDS OF HON. JAMES ARKELL, CANAJOHARIE, N. Y.

Aquatics.

WATER LILIES.

The water lily lake in the accompanying picture, though wholly artificial, forms quite an attractive feature of this place. It also shows what can be done despite adverse conditions. It is only a few years since the ground where these gardens are was nothing but a rocky barren baseball ground, but it fell into the hands of those born with an innate love for the beautiful who have at great expense made every corner of it blossom as the rose.

I said the lake was wholly artificial in its make up, yet it really is a pleasant

medium between the cement and the natural pond. The whole place is on lime stone rock, and in some parts there was not an inch of soil originally, so the lake was formed with soil from other parts, making a bank at the north side some 10 feet deep and somewhat kidney shaped. What natural soil was there was also thrown up to help make the banks, this being beaten and trodden down as firm as possible. Then the banks all round the inside and bottom were well puddled with two to three feet of clay, the same paved with stone and cement and the whole cemented over the top and rubbed in with an old broom. This last we have to do every spring some three feet down the banks. The top of the bank is sodded and there is a gravel walk all round.

The end of the lake not seen in the picture is the largest part. In that part there is an island on which is planted a variety of shrubs, trees and hardy plants such as willows, dogwoods, acacias, hibiscus, rudbeckias, grasses, etc. Around this island is a bed for hardy lilies some three feet below the water level.

Other beds are made in the bottom of the lake all over, while all along the banks are level places for the tubs containing the tropical lilies, and stone piers are built up in the open spaces in the bottom for the same purpose and made so that the plants will have from one to two feet of water over them. Above this and nearer the edge of the lake are a number of beds for planting out all sorts of hardy and tropical water plants dur-

ing summer. I find planting patches of seedling nymphæas in those beds to be very effective.

The water supply comes from gravitation wells some 75 feet above this level. An overflow is placed a little below the edge and the water runs out over a rock work among ferns before passing off. There is a suction pipe placed on the bottom outlet; this we use to lower the lake in summer when placing tubs, cleaning, etc., in the deep part of the lake.

The soil for the beds and also for the tropical lilies in tubs is composed of leaf mould, manure and soil. Our leaf mould and old hotbed manure are mixed together every year. We take one half of this mixture and one of good soil, and after planting cover the whole with sand.

put them in the cellar away from frost. We find we can winter them in fine form in this way, keeping the soil moist till they die down entirely, then towards the end of March or first of April we make a hotbed as for seeds and place tubs of water therein, and cover with sash. Then we look over our lily tubers pot them up in the mixture spoken of, in 3 and 5-inch pots and place them in the water tubs in the hotbed, keeping the glass on except on very warm days when air is given freely. In this humble, yet practical way (which is within the reach of all who have a garden) we have by the end of May fine plants to put in tubs to plant in lake, or fountain pond, the water of which will be by this time warm and fit for their reception. By the end of August

garden complete without them so it well repays the cost of buying them every year.

The lily seen in the picture beyond the *N. M. chromatella* is a seedling we raised in 1888. This I consider the most superb of the hardy white lilies. Some of the flowers measured ten inches last summer. The leaves and flower stems are almost red, the flower large and pure white, making it quite distinct from its seed parent, *Nymphæa alba*.

We have something like thirty-five varieties of water plants in the lake. Those in the foreground and round the margin are such as *Scirpus zebrina*, *Sagittaria japonica*, variegated sweet flag, *papyrus*, *Cyperus alternifolius*, *C. a. variegatus*, callas, iris, *hedychium*, etc., planted in beds with the following plants as a ground work: Water hyacinth in variety (see flowers in picture), *Limnanthemum indicum*, *Limncharis Humboldtii*, parrot's feather, *Limnanthemum nymphaeoides* and many others.

Our first flowers opened last summer on the 2nd of May, on *N. alba* and *N. a. candidissima*. A few weeks later we had them by the hundreds. Mixed up as they were with the tropical varieties in all colors, red, white, blue, purple, yellow and pink, when seen in the morning at 10 a. m. they made a scene of water flora to be long remembered. JAMES HEPBURN

Gardener for the Hon. James Askell, Canajoharie, N. Y.



NELUMBium SPECIOSUM IN FAIRMOUNT PARK, PHILADELPHIA

We also topdress the beds in the lake, after cleaning, in spring with the same mixture and have splendid results with but few exceptions. Among the exceptions are the Cape Cod pink lily, the *N. rosea* and *N. odorata*. These we have to get lake mud for, and grow them in cool shallow water.

The water in the lake becomes quite warm during summer hence our great success with the tropical nymphæas. The reasons I ascribe are that the lake is sheltered from the northwest, north and northeast by high trees, some 60 to 75 feet tall, but is fully exposed to the sun on the east, south, and west. I would advise anyone about to construct a lake for tropical lilies, to keep this sylvan shelter in view, more so in the northern parts of the country.

Perhaps right here a word or two as to the simplest means of getting the tropical varieties in shape for planting in spring may not be out of place. I have no doubt but a great many lovers of this class of plants would like if they could grow some of the tropical varieties but think they cannot do it without greenhouse accommodations. This is not so, here, when we take up our plants in the fall, we take some of them in early and place in tanks in the house to flower out. The rest we leave out till the frost makes it necessary to move them inside so we

we have massive flowering plants of the most tender sorts.

To the left in the picture are seen some fine flowers of *Nymphæa Devonensis*, to the right *N. cœrulea*, *N. scutifolia*, *N. zanzibarensis azurea* and *rosea*, all in fine shape. The mass in the foreground with the leaves standing out of the water is a very strong clump of the yellow *N. Mariacea chromatella*, which is a superb addition to our perfectly hardy lilies, but not more so than its rose colored companion *N. M. rosea*, which is equally hardy. Both flower continuously from May till frost. When I say these are hardy I may safely say I can speak for almost any part of the country, for the thermometer some winters goes as low as 28° below zero here; last winter it reached 26° below.

This climate is too severe for a great many so-called hardy plants. We have tried the lotus in variety for many years but have given it up. We made special preparation for them in 1883, planted them out and flowered them beautifully. They lived through that winter, just appearing the following summer, but did not flower. We tried it again, in boxes and tubs, moving them to tanks in house in winter; this proved a failure, from the fact that we could not mature a growth strong enough to keep them in a flowering condition. But there is not water

NELUMBium SPECIOSUM IN FAIRMOUNT PARK, PHILA.

The pond of nelumbiums at Fairmount Park is always a source of much enjoyment to visitors, so vigorously do the plants grow and so profusely do they flower. This pond is fed by a stream of water which not only supplies it but others as well, as it courses through the park. Running all the time as it does, and the plants having plenty of mud to root in, they pass through the winter safely, no frost penetrating to the roots.

As will be seen there are many hundreds of plants there now, yet this pond was started with but about a half dozen plants two years ago.

The group of grasses shown amidst the lilies is composed of *Arundo donax* for a center, with outside of *Eulalia japonica*. They flourish well. In the rear of this group on the lawn is a bed of rhododendrons with an American holly in the centre. The partial shade which the large trees give, is just what the rhododendron likes, and its blooms last longer in such situations than when in the full sun.

The large trees shown are of natural growth, and consist of hickory, tulip tree, red maple, sour gum and ash. Among those which have been planted are sweet gum, English oak, beech and other tall growers, to make shade, with groups of shrubs between them.

The commissioners of the park are very proud of the way their fellow citizens appreciate it. It is of such immense size, 2,750 acres, that the thousands who visit it every bright day have ample room for privacy and enjoyment. Picnic parties are in every grove, and one such has been caught by the camera, as shown in the illustration. JOSEPH MEEHAN.

The Flower Garden.

NARCISSUS POETICUS.

This flower has in the past been the favorite theme of the poets. The mythological lore connected with its name hav-



NARCISSUS POETICUS BORDERING A WALK ON THE ESTATE OF JOHN L. GARDNER, ESQ., BROOKLINE, MASS.

ing aroused the muse in Milton, Shelley, Cowper, Keats, Addison, and others.

The mythologists considered it the emblem of egotism because there lived a fabled youth whom fate decreed should live a happy life until he beheld his own face. Luckily this was before the day of looking-glasses or he would never have lived to have outgrown knickerbockers. One day when thirst compelled him to drink from a woodland stream he beheld the reflection of his own features and fell in love with them. It is said "He was spellbound to the spot, where he pined to

death, and was metamorphosed by the gods into the flower that bears his name. When the Naiads had prepared the funeral pile for Narcissus his body was missing. Instead whereof a yellow flower was found, with tufts of white about the button crowned."

Shelley refers to it in the following lines:

The pied windflowers and the tulip tall
And Narcissi, the fairest among them all,
Who gaze on their eyes in the stream's recess
Till they die of their own dear loveliness.

The habitat of the original species of the narcissus is confined chiefly to Europe,

North Africa and North and South Asia, the *N. poeticus* being from Southern Europe.

Cultivation has produced many named varieties all worthy of cultivation, but for naturalizing or for large borders *N. poeticus* is probably the best. It seems to thrive in almost any soil and position, doing well in partial shade. When left undisturbed for a few years it multiplies in numbers and increases the size of its flowers.

Our beautiful illustration from a photograph taken on the estate of John L.

Gardner, Esq., Brookline, Mass., shows the charming effect of this narcissus when planted in bold masses. Note the fact that the planting ends at a line back of the open lawn to the right so that it is partially hidden by the dense foliage of the bordering trees, where one is apt to come upon it as one has in his rambles in the woods suddenly come upon some group of flowers or ferns that add the charm of surprise to that of their own beauty. Nearly every garden of any size has shady walks or shady nooks where just such masses could be grown.

ROCKERIES.

During the first week in December, the weather being favorable for the opera-

but by all means provide a good rich porous soil for these plants and don't make the crevices or cavities between the stones too small, they must in all cases connect with the main or fundamental body of soil. Very few plants can live and flourish if their roots can not find their way into the soil below.

The shape and outline of a rockery should be rustic and irregular, shady corners should be created by placing large stones in such a position as to protect the more tender plants from the mid-day sun without robbing them of the requisite light. In nearly every place room for a rockery of some description can be found, and where a variety of hardy herbaceous plants are cultivated, it will be found that many of them succeed far better in a rockery than in the open border, but con-

thus, *iberis*, *phyteumas*, *lotus*, *leontopodium*, *aubrietias*, *coronillas*, *claytonias*, *æthionemas*, several of the anemones and others require ordinary moisture and do well in the sunny part of the rockery.

The shady nooks on the north side of large stones should be reserved for such plants as *hepaticas*, *dodecatheons*, *gentianas*, *myosotis*, a large variety of *primulas* and *auriculas*, hardy ferns, *soldanellas*, *plumbago*, *sanguinaria*, *Lobelia cardinalis* and *L. syphilitica*, etc. Here, protected from sun and wind the ground will not dry out so readily as in the more exposed places and the moisture loving plants feel more at home.

A well arranged rockery, be it large or on a small scale is always a most interesting feature on the grounds and never fails to attract attention at any time in the year. In early spring we may have *chionodoxas*, *crocus*, *scillas*, *snowdrops*, *adonis*, *arabis*, *tulips*, *myosotis*, the *primulas* and *violets*, followed later on by *alyssum*, *phloxes*, *iberis*, *æthionema*, *Dicentra eximia*, the dwarf iris, *lychnis*, *œnotheras*, *anemones*, *aquilegias*, *campanulas*, *armerias*, *silenes*, *aponarias*, *dianthus*, *heuchera*, *Papaver alpinus* and *nudicaule* and *globularias*, many of which will last in perfection until the fall blooming anemones, *plumbago*, *polygonum*, *Silene Schafta*, etc., take their place.

Even in the winter the rockery should not be without its attractions, a few dwarf evergreens in connection with *Euonymus radicans* and these plants which retain their foliage all the year around, like the *Daphne cneorum*, *iberis*, *armeria*, *helianthemums*, etc., will keep up the cheerful appearance in spite of the severest cold and frost, so that we may enjoy at least some signs of plant life in midwinter when it is supposed that all plants are asleep and at rest. However, there are scarcely three months in the year that the rockery is entirely without flowers, for by March the lovely *hepaticas* and the *snowdrops* and *scillas* are out again, while *Lychnis semperflorens*, *hellebores*, *Daphne cneorum* and *violets* hold out until December if the weather is as it has been for the last six or eight years.

Very little care, aside from keeping the plants watered in dry spells, is required. The old flowers should be removed as they fade away, and in order to keep the ground cool and prevent evaporation, the exposed surface of the ground, if there is any, should be kept loose and open. It has been recommended to place small stones or coarse gravel mixed with a little soil over the surface, but our long experience in this country teaches us differently. Our midsummer sun will heat those stones to such an extent that instead of keeping the ground below cool, they impart heat to it and draw out moisture rather than prevent its escape. In sheltered spots, where the sun has no access or where it only strikes the stones for a few hours in the morning or evening this mixture may be used with some advantage, but where the mid-day sunrays fall on them with full force, more harm than good may be expected.

It is not necessary that all the plants employed in rockwork should be of the hardy class, many of the half hardy, annual, or bedding plants can successfully be used here and often it may be desirable to provide space for the annual spring planting of these tender things, but where a stock of suitable herbaceous plants is available, much spring labor may be done away with by employing only the hardy plants.

J. B. KELLER.

Rochester, N. Y.



ROCKERY PLANTED BY J. B. KELLER.

tion, we rearranged some of the rockeries which in the course of years had become almost overgrown and covered with vegetation, some of the stronger growing plants having taken possession of more space than was intended for them, and in many instances crowding their more feeble companions.

One of these rockeries is situated on the east side of the dwelling house on a rather dry sloping bank, not exactly an ideal place for many of the moisture-loving Alpine plants, yet with a little extra care, the plants introduced, with few exceptions, grew fairly well for the last ten years without renewing, and in the present rearrangement many of the old specimens were left undisturbed, but as the material used annually for topdressing had by this time filled up many of the cavities and almost buried some of the stones, all the smaller plants had to be lifted. All the stones were removed, the plants dug up with ball adhering and laid aside, then after rearranging the rocks on the surface, it did not take long to replant the small plants into their proper places.

No fixed rule can be laid down as to how to place the stones. The proper arrangement must be left to individual taste, the situation, surroundings, etc., and the nature of the plants to be introduced should be taken into consideration,

considerable experience and a thorough knowledge of the habits of the plants to be introduced is surely necessary in determining the different positions for them. No matter how small the rockery may be, a surprisingly large collection may be represented in it and more so if we introduce spring flowering hardy bulbs in addition to the regular herbaceous plants. The great majority of rock plants may be called dwarfs, although in laying out a large rockery many of our taller species can be used to advantage, still on an average the dwarf plants should predominate and will be found most interesting and attractive; they do not occupy much space and as a rule are not very rampant growers, many species may therefore be represented in the limited space of a few square yards devoted to a rockery.

For the driest and most exposed situations the sedums and sempervivums should be used. *Antennarias*, *helianthemums*, *linarias*, the dwarf *papavers*, *statice*s and the low creeping *phloxes* do well in dry and sunny positions, while the *pentstemons*, *omphalodes*, *wahlenbergias*, *campanulas*, *œnotheras*, the dwarf *lychnis*, dwarf *asters*, *astragalus*, *polygonums*, *achilleas*, *hieracium*, *heucheras*, *aconitums*, *gypsophilas*, *silenes*, *polemoniums*, *globularias*, *epimediums*, *armerias*, *arenarias*, *alyssum*, the *epilobiums*, *Dicentra eximia*, *dictamnus*, *dian-*



A BOUQUET OF RUDBECKIA LACINIATA FL. PL.

DOUBLE FLOWERING RUDBECKIA LACINIATA.

In our issue of September 15, last we illustrated a plant of this new flower as grown on a lawn. We now give an illustration of an arrangement of the flowers for indoor decoration.

The flowers being produced on long wiry stems, hanging semi-pendent, and in open branched sprays, render it available for graceful decorations, and its keeping qualities being unsurpassed place it among the desirable cut blooms.

ANEMONE JAPONICA ALBA.

The accompanying photograph was taken last September after a good supply of flowers had been cut for weeks from the row which is several hundred feet in length and has been planted four years. As these anemones are such free bloomers, producing an immense quantity of buds from every joint in their tall, stiff and branchy flower stems, opening out in uninterrupted succession day after day, the cutting of one day is made good again in the next 24 hours.

Though an old plant and grown in many commercial places for cut flower purposes, it is not met with as frequently in private collections as it deserves. As a late summer and autumn bloomer it has few equals either in the mixed border or in beds alone and by itself, sending up its long stemmed pure white flowers continuously from August until the frost puts an end to further growth. A large clump of four or five plants, standing isolated on a lawn not too far away from a walk or driveway is exceedingly ornamental; even in the earlier part of the season the luxuriant foliage has its attractions. The ground below them would only be bare for two or three weeks in



ANEMONE JAPONICA ALBA.

early spring, which fault may be remedied by permanently planting some spring flowering bulbs, such as scillas, snowdrops, crocus, etc., over the little plot.

Anemones will grow most anywhere if they get a fair amount of sun, but they do best in well enriched soil and in an open situation. The ground should be well and deeply prepared for them, for their roots seek for moisture and nour-

ishment several feet below the surface. Annually in November or December a heavy topdressing of good stable manure, not only helps to protect the roots and insures an early and vigorous start in spring, but also keeps the soil in its original fertile condition. Young plants will not grow to their full height for a year or two but the third year and ever after, if the right conditions are kept up, we will see them attaining a height of 5 or 6 feet, stout and stiff, requiring no support whatever, and bearing their lovely flowers by the thousand.

The old rose-colored semi-double variety is a fair companion for it and several whites, like Lady Ardilaun and Whirlwind, showing the same characteristics, have been introduced and are very desirable, yet at a short distance the number of petals can not be distinguished and for general purposes the older kind is as effective as any. Lady Ardilaun we only had for two years and will not say as yet that it is not an improvement on the old variety, for by all appearances the flowers are of larger size and better substance, holding on to their petals more tenaciously than the pretty and free-blooming Whirlwind, but withal we shall keep on growing the old single white for show as well as for cut flower purposes, though in a collection of herbaceous plants all of them should find a place.

Rochester, N. Y.

J. B. KELLER.

CLEMATIS.

There is a clematis covering two sides of a house at Burton-on-Trent, England that is remarkable for its size. It covers a space seventy-eight feet long by thirty high and is supposed to have been

planted at least a hundred years ago. There are five main stems that measure about twenty-four inches in diameter some three feet from the ground. Our authority states that he does not know the variety but it evidently belongs to the small flowered species.

Undoubtedly the greatest impetus given to the garden cultivation of the clematis was the production of the variety Jackmanii, a cross between the European vine

THE PURPLE FRINGE TREE (*Rhus Cotinus*.)

bower, *C. viticella*, and the Chinese *C. lanuginosa*. This variety was introduced in 1863 and is more robust and more easily grown than any other of the large flowered forms.

In 1894 Messrs. Jackman & Son, Woking, England, exhibited before the Royal Horticultural Society the result of fertilizing the clematis Star of India, itself a hybrid, with the pollen from our Texas species, *C. coccinea*. The Star of India belongs to the Jackmanii section, being a large-flowered form, blooming on the current year's shoots. The flowers open out nearly flat and are in color a reddish plum with red bars. Our Texas species is considered by botanists to be a variety of our North American "leather flower" and is therefore *C. Voina* var. *coccinea*. As will be remembered the flowers of this species are produced upon the new wood, and in this one feature the parents of this new clematis already christened "Countess of Onslow," are identical. It too is a very important feature in our northern gardens where it is hard to save over winter the old wood that produces the flowers in the *montana-patens* and *florida* types. Beyond this similarity in the parents there is a wide divergence, especially in the form of the flowers.

C. coccinea is a vigorous slender vine with a light green foliage and a profuse bloomer, especially late in the summer, its flowers always being caught by the early frosts. The most prominently exposed

portions of the flowers are four thick fleshy sepals, campanulate at the base and reflexed at the tips, over an inch in length and bright scarlet in color. To those unfamiliar with the flower they present the appearance of a bud just opening at the tips.

It will thus be seen that there is a wide difference in the appearance of the flowers of the parents of this new clematis, and the result seems to be a compromise between the two forms. They are described as being of a somewhat open bell-shape and a good deal larger than *C. coccinea*. The color is a bright violet-purple with a broad scarlet band down the center of each petal. Other hybrids of *C. coccinea* have been obtained by the same firm and it is to be hoped that a sufficient stock of them has been worked up by this time to enable our American dealers to place them before the readers of GARDENING. As is well known, *C. coccinea* is entirely free from the provoking disease so fatal to many of the large flowered forms, and it may have transmitted to its off-spring a portion of this desirable immunity.

There is another form that is free from disease and one that seems scarce in our gardens, but which when established is a very desirable plant. It is a form of *C. viticella*, known as *C. kermesina*. It is not a rampant grower, but will in time cover a fair space and freely produce many four-petaled flowers of a rich wine color, about two inches in diameter.

It is a good companion for the heavy-scented clematis from the mountains of Thibet, *C. graveolens*. This is a quick growing species, hardy and with handsomely divided foliage. The flowers are solitary, on long stalks in the axils of the leaves, an inch and a half across and light yellow in color. The blister beetle is very fond of this species and some times attacks it so vigorously as to prevent its attaining a height of one foot in a season.

W. C. EGAN.

CANNAS.

Among the debutantes of 1896 Cote d'Or, a pure yellow of good substance, Gloire de Montet, somewhat like the German canna Queen Charlotte, only the yellow runs into the red, making the combination more pleasing, and Compté, which might be termed a dwarf form of Florence Vaughan, are all good and none growing higher than two and one-half feet. Here is a chance for obtaining dwarf cannas for the outer border of beds.

Among the novelties not yet sent out is a pink canna belonging to Messrs. A. Blanc & Co., of Philadelphia, known as seedling No. 2012. The petals are two inches long and one and a quarter broad and of a color marked as pure pink in Mr. F. Schuyler Mathews' color chart. It is extremely pleasing as an individual plant and a new departure from the prevailing yellows and reds.

M. A.

Trees and Shrubs.

RHUS COTINUS.

(Purple Fringe or Smoke Tree).

Though not a new plant, this is one of the best of the mid-summer blooming shrubs. It is a native of southern Europe and is hardy in this section of eastern Iowa. It becomes a large sized shrub, looking better as a single specimen than when planted in groups. During the latter part of June and in early July it is covered with large panicles of purplish misty-looking blossoms which are very effective. They last a long time when cut and are largely used here for house and mantel decorations. The shrub is neat in habit, does not sucker, and in the fall the leaves color to red and yellow and make a pretty landscape effect.

When planted in too rich a soil it is sometimes attacked by a fire blight, like the apple and peach trees, but where it does not grow so rapidly I have not noticed anything the matter with it.

The specimen here illustrated stands on the lawn of Mr. Charles Lau whose residence is on the open prairie some eight miles from Davenport. It was planted some ten years ago, and has never been protected in winter.

J. T. TEMPLE.

Davenport, Iowa.

SHRUBS AND TREES WITH SHOWY FRUIT.

The ornamental value of many shrubs and trees with showy fruit is an important desideratum in gardens and pleasure grounds. As a general rule most shrubs and trees with blossoms seldom have conspicuous fruit, and conversely shrubs and trees with handsome fruit seldom have conspicuous flowers. Of course there are some exceptions to this rule.

The winter berry (*Ilex verticillata*), a native, tall-growing shrub, in moist, low grounds, is at this time of the year very gay with an abundant display of bright red berries. We find it is not difficult to transplant, and it does well in moderately

dry soil. It takes two years to come from seed. Nursery grown plants of it are hard to obtain.

Mountain holly (*Nemopanthes Canadensis*) is a large, native, handsome shrub growing in damp, wet ground, which bears a large crop of handsome red fruit on long stalks in August and September. In cultivation, with us, it grows slowly. The mountain holly is also difficult to obtain from nurseries.

The common and Canadian barberries are indispensable for their handsome fruit displays. Large established bushes of the common barberry with their curving branches loaded down with the scarlet oval-shaped berries throughout the fall and early winter always have a cheerful and warm effect in the garden. Thunberg's barberry looks bright at this time of the year, and will do so throughout the winter. The Cretan, Chinese and Siebold's barberries give beautiful displays of fruit in the fall; the last named has handsome yellowish-red fruit, and is quite hardy here.

The snowberry (*Symphoricarpos*) with its large, white, round berries is quite conspicuous late in the season, and although common and easily grown, it deserves attention, and the coral berry (*S. vulgaris*), with the branches covered with the coral red fruit, look real attractive to-day on the top of the snow.

Most of the cotoneasters are showy in fruit, but the handsomest of seven or eight forms we have is *C. Simmonsii*. It retains the foliage well into the winter, and the whip-like branches are studded thickly with bright red berries about the size of peas. In a warm, sheltered situation here it stands the winter well, but probably in an exposed cold situation it might suffer severely.



BERBERIS THUNBERGII AT TOP. BERBERIS VULGARIS VAR. AMURENSIS BELOW.



CELASTRUS ARTICULATUS. CELASTRUS SCANDENS.

The chokeberry (*Pyrus arbutifolia*), with dull red fruit, and the variety *melanocarpa*, with jet black fruit, are quite attractive. Although common native shrubs, they are very desirable in pleasure grounds and grow easily in any soil. The fruit keeps in good condition until the first of December.

The high bush cranberry (*Viburnum opulis*) is well known for its handsome, hanging, red bunches of edible fruit. It

retains the color well until several times frozen. The nannyberry (*V. lentago*), a common native, tall growing shrub or low tree, has large cymes of oval-shaped black berries, which are quite noticeable and are often eaten by country people. The Asiatic *V. dilatatum* is very handsome in fruit. It used to look handsome at Dosoris, L. I., but we cannot induce it to thrive with us here. *V. lantana* has quite showy, blackish fruit throughout

late summer and early fall, and the native with the rod, *V. cassinoides*, when in good condition has perhaps about as showy fruit as any of the genus. When ripening it assumes a rosy pink cast and later turns dark blue, and is quite showy throughout early fall.

Our native climbing bittersweet (*Celastrus scandens*) is indispensable as a showy fruited plant. We saw a fence a short time since in front of a dwelling, enveloped with this vine, and the masses of orange-colored pods with the scarlet interiors looked charming and cast a cheerful aspect over the surroundings. The Japanese *C. articulatus* is pretty, but not as showy as our native species.

The different species of spindle tree (*Euonymus*) are pretty well known for their showy fruits. The European and American species, including the native Waahoo, are most desirable in all grounds where showy fruited plants are wanted, and some of the Asiatic species, such as *E. Yeddoensis*, *E. angustifolius* and *E. Bungeana*, are appropriate for their fruit.

The Chinese matrimony vine is very showy throughout the fall with its bright scarlet, fleshy berries.

The night shade bittersweet (*Solanum dulcamara*) bears abundant large, oval-shaped, red berries, and although it has naturalized itself abundantly throughout the country, it should not be despised, for it is very showy. It is claimed by some to be poisonous, but for that we cannot vouch.

Most of the native hawthorns are very handsome in fruit. The cockspur thorn, pear thorn, large scarlet fruited thorn, are exceedingly effective when covered with their prominent red apples, and are ornamental in any grounds. The different forms of the European hawthorn where



ROSA MULTIFLORA JAPONICA AT RESIDENCE OF MR. THOS. N. COOK, CAMBRIDGE, MASS

they do well are very desirable. The southern European evergreen thorn (*Crataegus pyracantha*) where it proves hardy enough is exceedingly beautiful when studded with its orange scarlet berries. It is not hardy here unless well protected. We mulch our plants heavily with leaves so that the frost never gets near the roots.

The "flowering dogwood" (*Cornus florida*) with its red fruit is very conspicuous throughout the fall in years when it sets its seed freely. Some years it bears fruit sparsely. The cornelian cherry (*C. mascula*) from Europe has remarkably beautiful oblong large carmine red berries throughout late summer and early fall, and a well grown specimen covered with the handsome fruit is what any one may well be proud of in their grounds. The silky dogwood (*C. sericea*) has showy blue fruit, and the almost herbaceous dwarf dogwood or bunch berry, *C. canadensis*, when it carpets the ground thickly with its globular clustered fruits, is a little gem.

Quite a large number of the bush honeysuckles are conspicuous in fruit throughout late summer and early fall. The dif-

ferent forms of the Tartarian honeysuckle have yellow and red tinted fruit and are always noticeable.

On former occasions in the pages of GARDENING we have called attention to the handsome fruit displays of *Lonicera bella*, particularly the form under the name of *albida*. When the curving branches are enveloped with the conspicuous red fruit, this magnificent shrub always attracts the attention of every one. *L. Morrowii* makes a good display of fruit. Amongst the twining species *L. glauca* has attractive bunches of red berries late in the season. JOHN DUNBAR,

Asst. Supt. of Parks, Rochester, N. Y.

WINTER PROTECTION FOR TREES AND SHRUBS.

It may seem late in the season to suggest winter covering for trees and shrubs, but as a matter of fact there is no need to do the work of covering until after the New Year comes. It is usually done before this date, not that it is necessary, but that it can be done more comfortably before ice and snow put in an appearance. In many commercial places where profits compel close attention to such matters,

the covering of stock commences at about Christmas time, not before. At the present writing, December 18, the mercury has fallen to 18° more than once this month, yet I am sure nothing that we usually cover is any the worse for it, though still fully exposed. It is the bright sunlight of February and March that we protect against, when followed by cold nights.

The best protection is that which keeps the foliage in partial darkness and the frost from penetrating to the roots. The warmth and intense light of the sunny days of early spring and the strong winds and freezings at night cause such a loss of moisture by transpiration, that the plants cannot survive it uninjured. There should be forest leaves enough placed about the plants that but little frost will get through them, and leaves or evergreen branches placed to shelter the foliage, when evergreens are in question. It is a mistake to think that cold winds do all the damage. It is not uncommon to see a fence erected in winter on the north side of rhododendron and other evergreen beds, with no covering at all over the plants. I am not sure that this is of any use at all. It breaks the wind, but it raises the temperature about the plants in the day time making them more liable to injury by the low temperature at night. With forest leaves about the plants or covering of some kind, as already suggested, the fence is a great benefit. My own experience convinces me that the keeping of frost from the roots is the best kind of protection. A plant so covered seems better able to supply the moisture which is so urgently called for in winter than one that has its roots in frozen soil, and it matters not whether it be evergreen or deciduous.

We are more favored in Philadelphia than many of your readers are for there is hardly a coniferous evergreen of any kind in common use that we have to cover. Irish yews are sometimes browned on the sunny side, the deodar cedar may lose the topmost, exposed foliage; cephalotaxus will sometimes be nipped a little on its extreme ends, and *Cunninghamia lanceolata* likewise, and all these are the better for the protection of some evergreen boughs. But our Lawson cypress and *Thuyopsis borealis* which so many find necessary to cover, are never hurt here, no matter how cold the winter be.

Among broad leaved evergreens our gardeners like to cover nearly all of them though many are quite hardy, for the sake of preserving the foliage in good condition, as there is so much more pleasure in viewing a plant with its foliage green and fresh in spring than otherwise. In the list are the following: *Magnolia grandiflora*, *Aucuba Japonica*, *Skimmia Japonica*, *Daphne cneorum*, *Euonymus Japonicus*, English holly and *Mahonia aquifolia* and rhododendrons.

The English holly seems to me to be a much harder evergreen than is imagined. Given a start when young, by protecting it in winter, as suggested, it seems to need none at all afterwards, and what is more carries its foliage well through the winter. *Skimmia Japonica* does the same. But *Magnolia grandiflora*, though hardy enough when so treated, does not keep its foliage well, neither does *Aucuba Japonica* nor *Euonymus Japonicus* and its varieties, and these are the better for being shaded. It will be in place to suggest here that when planting these and similar evergreens they be set in some place free from much sun in the winter season.

Among deciduous trees and shrubs benefitted by a covering above the roots,



VASE FILLED WITH ROSA MULTIFLORA JAPONICA.

are those known to belong to a warmer clime. The paulownia, crape myrtle, leycasteria, *Limonia trifoliata* and southern oaks may be mentioned. And one of the greatest helps to newly planted trees, is to mulch them well with some material to keep the frost from their roots.

Philadelphia. JOSEPH MEEHAN.

EUONYMUS RADICANS.

Who can account for the inherent power of this plant to control its habit of growth, and without the aid of man, become either a low bush or a climber?

I grew it as a border to a small bed. It formed a low hedge, never attaining a height of over fourteen inches, standing upright and never trailing. Two years ago I put an oak post at the end of this "hedge" to support a new honeysuckle I was trying. Last spring I noticed that the *euonymus* nearest the post had taken advantage of the opportunity offered and climbed up the post about five feet. That part of the plant that could lay against the post climbed, the balance remained in bush form. I have put a variegated form of this plant against a brick wall to see if it retains the climbing instinct of the type.

This plant is sometimes called the Japanese box. It is very neat in its appearance, grows readily in sunshine or shade and the winter coloring of the variegated form is exquisite. It seems perfectly hardy, and is classed as an evergreen.

Highland Park, Ill. W. C. EGAN.

Roses.

ROSA MULTIFLORA JAPONICA.

The early history of my plant is unknown. In the spring of 1888 a friend (an old London gardener) brought me from London two plants. He said it was "a rose of which he had forgotten the name, but they are rare and not to be

had in America." I planted the two in my observation corner for a year until I could determine their habits, and in the spring of 1889 planted one bush in the place shown in the photograph, and gave the other plant to a friend. When the plant at the Arnold Arboretum was figured I identified it as the same as mine and when my plant was in bloom the next year sent leaves and flowers to Mr. Jackson Dawson who agreed with me.

The plant which I kept I planted near the porch of the side door of our old house in Cambridge, Mass., having a southwest exposure, first preparing the ground by throwing out about four feet of pure sand and filling in with old turves, well rotted dressing and a few handfuls of bone meal. I then covered the porch with the strongest wire netting I could get, five feet wide. As fast as the shoots grew they were secured to the netting so as to cover the porch, and so fast did it grow I was obliged to trim out on the entrance side.

After planting it had the same attention as my other roses, washing with whale oil soap in the early spring, a good washing once or twice a week with the hose, and an occasional dusting with "slug shot," and in the fall a thick but light mulch with rough stable dressing, which was shook out in the spring, and the fine part with a handful of bone meal dug in; and as the subsoil was pure sand, an unlimited supply of water. It flowered very well in 1891, but in 1892, '93, '94 and '95 it flowered grandly, and the photograph was taken June 14, 1894. The plant was then 15 feet high and 9 feet wide, and would have been two or three wider on the door side if we were not obliged to trim it out.

Rosa multiflora Japonica is a stout bush, arching above the middle. The stems are bright green and round, armed with strong and sharp spines. It flowers in great racemes of 20 to 50 flowers, each as large as a silver quarter, pure brilliant white with bright golden sta-

mens and a powerful rose perfume that spreads for blocks around and brings all the honey gathering insects for miles. One hour after the picture was taken an enormous swarm of bees settled on the fence, and they must have come from at least four miles as there were none kept nearer, our part of Cambridge being thickly settled. The flowers last ten days. The hips are bright red and persist all winter and are handsome.

In November, 1895, I moved the plant to my present home in Brookline, and the shock was too great for so large a plant so that it killed back to within a few feet from the ground. This spring I took it up, trimmed back the top to a foot from the ground, pruned the roots, and planted it in a specially prepared spot and am glad to say it has thrown up ten new and strong shoots now six feet long, and in a few years I will have a much larger plant than before. It is perfectly hardy, the tops have never killed back with me, and it has no protection except the mulch which I think is necessary to prevent early action.

T. N. C.

ROSA SPINOSISSIMA VAR. ALTAICA.

(*R. grandiflora*.)

Mention has already been made in GARDENING of the beautiful species from the Altai mountains of Siberia. In fact it was GARDENING that called my attention to it and caused me to procure it. It certainly is a charming rose, and now that the single-flowered roses are receiving more attention than in the past this one should not be overlooked. It is classed among the Scotch or Burnet roses, forming a bush three to four feet high, and blooming in May. The flowers are large and showy and a very pure white. It blooms some the first season planted, but is more profuse when established. It is catalogued by an American nursery as *R. grandiflora*, which must not be confounded with a hybrid polyantha form known in England under the same name.

W. C. E.

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

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JAPAN is rich in varieties of flowering cherries, but she has few, if any, that bear edible fruit. The cherries eaten there by European residents are imported from Australia.

THE Cherokee rose figured in the last issue of GARDENING is *Rosa sinica* (lavigata), a native of China that has escaped cultivation in the eastern southern states, and is consequently supposed to be indigenous. It is not very hardy and dislikes cultivation in pots.

ROSA CALOCARPA is the result of a cross between *R. rugosa* and the old Bengal rose (*R. Indica*) obtained by Mons. Georges Bruant in 1890. The hips are smaller than those produced by *R. rugosa*, but much brighter in color, and more freely produced. It is described as a strong grower and abundant bloomer.

THE BEAUTIFUL PICTURE of *Exochorda grandiflora* in the last issue of GARDENING calls to mind another form not yet in general culture in America. *E. Alberti* is a new shrub very closely resembling *E. grandiflora*, and said to be much hardier and to bloom some ten days earlier. The petals are narrower than *grandiflora* and the flowers are deposited in spikes instead of the flat racemes of the older forms.

W. C. E.

WHILE the double forms of hollyhocks are best when treated as biennials, they can be carried on safely for a number of years if the faded flowers are but picked and the seeds not allowed to mature. In winter the soil should be hilled up against the crown, or better still small boxes placed over them. Moisture does as much damage as frost, if not more.

HOWEA BELMOREANA, better known as *Kentia Belmoreana*, from Lord Howe's Island, *Livistona chinensis*, known in greenhouses as *Latania borbonica*, from China, the variegated *Pandanus Veitchii*, from Polynesia, and the green form *P. utilis* from Madagascar, are among the easiest managed plants in furnace heated houses. The last mentioned grows to be sixty feet high in its native home, but you needn't fear it doing so in yours.

THERE WERE two instances brought to our notice last summer of wild sunflowers blooming in the crotches of trees. In one case it was in an Elm some fifteen feet above the ground, and the other in an oak fully thirty feet high. Birds had probably dropped the seeds there and the frequent rains had caused them to grow and mature in the limited quantity of soil and decayed wood lodged there. There was a single bloom on a stalk a foot long on each plant.

THE WHITE or yellow Marguerite (*Chrysanthemum frutescens*) from the Canary Islands, is a good season bedder, making before the summer is over quite a large, many-branched bush. It blooms freely and will be loaded with undeveloped buds when cold weather approaches. It can then be potted and brought into the dwelling house where it will continue to flower as if nothing happened until all buds made in the open air have bloomed. This species has also the common name of Paris daisy and is sometimes classed botanically as *Pyrethrum frutescens*.

HAS IT ever occurred to our subscribers that the four volumes of GARDENING already issued, form a complete encyclopedia of ornamental gardening? Almost every known tree, shrub, vine or flower has been intelligently written about, and every subject incident to successful gardening has been fully discussed. The numerous faithful illustrations given, reproductions from nature, have been a fruitful mine of information, for "Seeing is knowing." There is no work in American literature that has appeared up to now that is so fully instructive in gardening matters.

PROF. EDMOND GAIN, of the University of Nancy, France, in his experiments on the influence of moisture upon plants finds that it varies greatly at different periods of growth. In most cases water is essential when the first leaves are appearing. Then there seems to be a slight call for it until the blossoming period arrives when the demand is great. He states that fruit is best perfected in comparative dryness. In all his experiments he found that plants that were watered at the two critical periods of growth—the unfolding of the leaves and at the commencement of blossoming—did just as well as those constantly watered.

GET ALL your garden implements under shelter. All broken tools should be mended, or discarded and substitutes provided, and everything be gotten ready for spring work. Examine the watering pots and solder leaky or weak spots and then paint them inside and out. It is a

good idea to paint all such things as step-ladders, watering cans, wheelbarrows, garbage cans, etc., some one color, brown for instance, that identifies in a measure one's possessions. Of course a borrowing and non returning neighbor may not sanction this advice. The lawn-mower undoubtedly needs overhauling and oiling against rust. All this should be done before the rush of spring work commences.

THE YOUNG MARKET GARDENER is the title of a new book by T. Greiner. It is intended as a guide to those who intend to follow the business of growing vegetables and small fruits, both under glass and in open ground. It is bound in paper covers, contains 124 pages and the price is 50 cents. A new edition of "The new onion culture," by the same author, has also been issued. Paper covers, 90 pages, price 50 cents. Of "Practical farm chemistry," telling all about manures and fertilizers and how to use them to greatest effect and profit, a special cheap edition has been issued in paper covers. Price 50 cents. All above are published by the author, T. Greiner, LaSalle, N. Y.

BIRDS IN CONSERVATORIES.—The commissioners of Lincoln Park, Chicago, have been placing birds in the palm house. For some years a species of rail has had the freedom of the place and has afforded considerable amusement to the children. This evidence of life amid the tropical scenery is a pleasing feature. Lately they have been adding to the number, selecting some European species, a Japanese robin, and about twenty-five canaries. Everything was all right until these songsters were let loose. They are proving disastrous enemies to the well-being of many of the plants. They are rapidly stripping the leaves of *Solanum jasminoides*, *Jasminum pubescens*, *Bougainvillea spectabilis*, and the young tips of the bamboo. They do not seem to touch the allamandas. The passifloras evidently suit their palate also as they have already nearly completely stripped one vine. It is hard to tell whether this destruction is pure wantonness or done in satisfying their natural hunger. A few leaves could be seen still on the vines showing evidence of having been eaten into, but as a rule the leaves were torn from the plant and allowed to fall to the ground. At one vine in which there must have been fully a dozen birds the leaves were dropping at the rate of three or four a minute. These birds have been in there over thirty days so it is evidently not a sudden spasm developed at the first sight of verdure after confinement. The problem now is how to catch them. They can't be shot, as that would endanger the glass.

The Greenhouse.

EARLY FLOWERING PLANTS FOR THE GREENHOUSE.

In the fall and early winter there is generally a lack of flowers in the greenhouse, chrysanthemums being about the only flower one sees. But a variety can be had by getting together a young stock in the spring and growing on all summer.

Amongst the many plants that can be had early in flower the Chinese primroses are one of the best and showiest. To have these early they should be sown in the early part of March, grown on all summer in a shady frame and potted on as needed, the last shift being given about the first of August, which should be into

a 6-inch pot if fine large flowers and plants are wanted. A second sowing in May will give flowers from February till spring. It is well to get the best strain of seed and each variety by itself as mixed seed is sometimes poor. We have Sutton's Royal Scarlet, Sutton's Royal White and Sutton's Purity, with flowers nearly two inches across.

Primula obconica is a free flowering variety. If sown in February and kept potted on it comes into flower in October and lasts all winter. It is fine for cut flowers and lasts a long time in water. Some people have a dislike to it on account of its stinging nature. While at Doris it used to trouble me very bad but it has no effect on me now and we regard it as one of the finest winter blooming plants we have.

Primula Forbesii is a compact growing little plant and very free flowering. It comes early and lasts all winter. The flowers are pale lilac and grow in whorls all up the stalk, which is about 15 inches high; it needs the same treatment as *P. obconica*.

Libonia Penrhosiensis is a pretty free flowering little plant. If wanted early it is best to grow it in pots all summer, but it does best when planted out and lifted in September, it makes bushier plants in this way. Cuttings should be put in in March. Our early plants are now past their best.

Stevias can be had in flower from October to February if a cool greenhouse or pit can be used for them to keep them back. The ones that are wanted for early flowers should receive their final potting into a 5 or 6-inch pot in the early part of August, while the others for later flowering can be potted on as needed up to an 8-inch pot. Some people plant them out all summer. I have tried both ways but the pot grown plants were the best, not so much in flower as in foliage. The plants that were lifted lost their lower leaves giving them a naked appearance.

Marguerites or Paris Daisies make a fine display in early winter. These are also best grown in pots all summer as if planted out they grow too large. Cuttings put in in April make nice bushy plants by fall if kept well pinched in and repotted as needed.

The new hybrids of *streptocarpus* are a pretty class of plants. Seed sown in February will give nice flowering plants in late summer and fall and if kept potted on as needed will bloom all winter. A little care has to be taken in the sowing of the seed, which is just like dust, but when once they are up they grow very fast. They seem to like an airy house to grow in and they make nice window plants. They also do well planted out in a shady frame, lifting them in the fall when cold weather sets in.

Cyclamens have been in bloom for some time. The old bulbs started in July are giving plenty of flowers while the ones that were sown last December are just beginning to flower. These were grown in a shady frame all summer with plenty of air and they seem to like this sort of treatment. Amongst the newer ones Sutton's White Butterfly is a lovely large pure white flower. Some other newer ones are not yet in flower.

Violets do very well in pots and come in flower early. One of the best for pot growing is Lady Hume Campbell. The foliage is good and the flowers large.

Carnations can be had in flower quite early. Cuttings put in about the first of February, planted out in April and lifted in September, will give flowers by the end of October. Three of the best for pots are

Thomas Cartledge, Wm. Scott and Daybreak.

Geraniums are a much neglected class of plants. When a good collection is in flower it is hard to find anything to compare with them. Cuttings put in about the first of May and kept pinched make nice flowering plants by fall.

Begonias in variety can be had for early fall flowering. One of the best for this purpose is *Begonia semperflorens hybrida*. This also makes a fine bedding plant and if lifted in the fall it flowers all winter.

Gesnera zebrina discolor is a lovely bulbous plant. If potted up in July and grown on in a warm house it comes in flower in November. The foliage is very pretty. The flowers are in shape much like a foxglove and the plant lasts a long time in flower.

Freesias potted up in July are now in flower and a succession of them can be had all winter. They are one of the sweetest plants grown.

Schizostylis coccinea is a half hardy bulbous plant that comes in flower in October. It has long spikes of scarlet flowers which are very good for cutting. It should be planted out in spring and lifted in September. It grows quite fast and a stock of it is soon worked up.

Roman hyacinths and paper white narcissus can be had in flower by Thanksgiving if potted up early, and a succession can be kept up till March.

DAVID FRASER.

Mountain Side Farm, Mahwah, N. J.

CYCLAMENS.

I have a batch of cyclamens about two years old just coming into flower. The plants look vigorous and healthy but the flowers are coming deformed and discolored.

Last year the same plants threw very few perfect flowers, nearly all turning black and withering when about to open. There were no insects that I could see on them, so I blamed too rich soil, it was nearly half leaf-mold, and a little rotted cow manure, the rest loam and sand. This year I shook them clean of soil, repotted in plain loam and sand, housed them September 15 in cool greenhouse, gave no fertilizer of any kind, and they are now fine plants and full of buds.

Some days ago I noticed the flowers that were showing color coming like last year's, deformed and discolored. With the aid of a magnifying glass I discovered on dissecting some flowers, numbers of small insects, not unlike the red spider but rounder and more transparent, very lively when disturbed. Will you please tell me if these insects are wholly the cause of the trouble and if it is possible to rid the plants of them. Situated as they are inside the petals of the flower no insecticide can reach them. Would like to keep the plants for another year as the strain is first-class.

I may add that immediately on discovering the insects I gave all the plants a bath in a tub of fir tree oil and water, but it did not reach the insects inside the flowers.

CANUCK.

In answer to "Canuck" would say that the little insect he has discovered on his cyclamen flowers is most likely the same small creature that troubles verbenas, petunias and some other plants, and used to be called rust because it gave the leaves the appearance of rust, as does the chrysanthemum rust. With the verbenas and petunia the rust appeared after a stunt in their growth, and this is the case with the attacks of most all of our plant enemies.

The vitality of the plant is weakened, and then these minute creatures or their germs have congenial conditions to get in their work and develop.

It is, however, unlikely that these insects are the only cause of failure with "Canuck's" cyclamens. If the bulb, or more properly corm, received an injury from being too wet or too dry you could not expect either healthy leaves or flowers to follow. I have often, and so have all growers, seen cyclamens in the state described above, and there is only one reasonable cure, but it is entirely satisfactory to all live gardeners, viz., throw them on the dump pile at your earliest convenience. You were very wrong to attempt to grow them the second year, and it would be a bigger sin against wisdom to attempt to grow them the third. As good a strain can be readily procured.

I am not asked by "Canuck" for a chapter on cyclamens, but I will briefly say that seed should be sown anywhere from September to New Years, and from the time they are in 2-inch pots should never receive a stunt of any sort, but kept vigorously growing. Many years ago cyclamens were often carried over the second year, but since the improved method of growing has been in vogue that is seldom attempted, even by the most antique expert.

WILLIAM SCOTT.

The Fruit Garden.

GRAFTING FRUIT TREES.

The winter season affords the opportunity of looking through the orchard and deciding whether or not any of the trees would be the better for grafting. Very often there are trees of kinds unsuited for the locality, and which would be greatly improved by being grafted with sorts known to do well. It may be, too, that room could be found for the trial of some of the newer kinds. It is better where trial kinds are to be used, that they should be placed on a tree by themselves, rather than a kind here and there throughout an orchard. A tree with more than one sort on it is rarely good shaped. Nearly every variety of fruit has a habit of growth peculiar to it, and when two are on one tree the growth is rarely uniform, so that a well shaped tree is out of the question. Trees are often as much valued for their beautiful growth as for the fruit they bear.

Cions for grafting should be cut while still entirely dormant. If left on the trees until the buds begin to swell, grafting is not apt to be successful. A good many practice cutting them soon after New Years. The best shoots are vigorous ones from vigorous trees. Such as are of about three-eighths of an inch in diameter are about the right size to use, or a trifle smaller or larger. These shoots are to be kept buried up in soil, out of doors, or in a cool cellar, there to remain until wanted. When to be used, cut them so that two eyes will be left to each piece, to appear above where inserted in the stock.

The proper time to graft is when the buds on the trees are visibly swelling. This indicates a flowing of the sap, which must commence beforehand, or grafting will not succeed. If the cions are entirely dormant, grafting may be successfully done even after the trees are almost in leaf, though much better done when the first signs of swelling buds are perceived. On the other hand, if done before the sap rises, the cions dry out and die, receiving no support from the stock.

To be successful in grafting, the outer bark of the cion must exactly meet the outer bark of the stock and the cion must be cut as true as possible, that the parts of each may fit each other closely. Sometimes when the stock is of much larger diameter than the cion, two cions are used, one on each side of the stock, and it is a very good arrangement.

It is not often that branches over an inch in diameter are used for stocks. Those of three quarter inch diameter are very good. The larger ones will usually hold the cions by their own spring, without having to tie them, but those of lesser diameter are the better for being tied, to hold the cions firmly in place. After this there is still to be applied some material to keep dampness and air out. In olden times clay was used, but at the present time what is called grafting wax is used nearly altogether. This can be bought cheaply ready for use at any large seed or horticultural store. Those who prefer to make their own can do so by melting together one pound rosin, one-fourth pound beeswax and two pounds tallow, to be warmed up and applied with a brush, just enough to cover all the cut parts is sufficient. A liquid mixture is made as follows: one pound rosin, one ounce beef tallow, when cool, after melting, add eight ounces of alcohol, and keep it in a bottle.

I should have said when speaking of the branches to be grafted, that they should be cut back to within three or four inches of where they start from. Grafts should not be placed on the ends of long branches.

After grafting there is no more to do except to cut the strings of those that have been tied, as soon as growth has well started, to permit of the swelling of the parts as they expand.

Philadelphia. JOSEPH MEEHAN.

PEACH-BORERS.

For several years we have adopted the plan of banking up a small mound of earth around the base of peach trees about nine inches high with invariable success. If done in May or June before the female insect lays its eggs she either goes elsewhere to deposit them or if laid on the top of the mound the firm bark of the trunk is uncongenial and if it hatches after working a little way toward the roots it dies before it has accomplished it. The work is easily done and needs but little attention to keep up the small mound through the tree's life. It is an old practice and the wonder is that it is not more known and practiced.

There is no pleasure more sweet to the horticulturist than to enjoy plenty of fine fruit of his own growing and to watch the growth, budding and fruition of some superior new fruit, perhaps his own production. To know the fruit, to realize all his expectations or its recommendations, none can experience its joys but the fruit grower. We do not realize our hopes always, failures often, but success when it comes heightens the enjoyment.

The writer does enjoy the luscious strawberry and other fruits in their succession, even past fourscore, but none of these can compare with the pleasure of possession of a fine beautiful crop of peaches ripening from the earliest to the last. We do not tire in picking and taking to the house a basket of fine Oldmixons or Susquehannahs and other varieties in their season, and while we are handling them the examination of their quality, perfection of the flavor and productiveness of some new *splendid* kind, adds very much to the interest. Besides

having plenty for home use there is the pleasure of giving to a friend or to some not in affluence to make their hearts rejoice and the eye of the little ones sparkle with joy.

Last spring we had some severe frosts when the trees were in full bloom and thought all the blooms were destroyed, but we found four very thrifty trees marked Champion had a goodly number of the best large sweet white fruit we ever saw so soon in the season. It realized all claimed for it. Although it is said the Susquehannah is a shy bearer we have found it to be the most prolific and largest peach and most valuable for canning of the yellow-fleshed peaches we have grown. We may add we only grow for home use. Crosby had only one poor peach.

ISAAC HICKS.

Long Island.

GOOSEBERRIES.

J. Meehan is correct in reference to gooseberries. We have known a variety of English that were shaded by a fence and mulched every year with salt hay that bore fine crops every year. We have no trouble with the Industry, it never has mildewed. It is a little shaded by adjacent trees.

ISAAC HICKS.

Miscellaneous.

FLOWERS IN THE HOUSE.

Everybody loves flowers, some in greater degree perhaps than others, but everybody loves them in some degree. There is great diversity of opinion, however, about the best way of arranging them. The florists have their ways, which may be called the professional ways, and amateurs have other ways. If a word from one who buys flowers and loves them dearly, but is not of the profession, will be of interest to readers of GARDENING, I should like to speak about the arrangement of flowers for various purposes and occasions.

I like best flowers used with their own natural foliage, with stems cut of generous length and always unwired—wiring stems is fatal to artistic effect.

Cut flowers are at their best placed in undecorated glass vases, the mouths of which are smaller than the part holding the water as shown in Fig. 1; or a cylinder shaped jar of glass always shows the flowers to good advantage; (see Fig. 2) the stems showing through the clear glass, and the foliage that which belongs to the flower. I like too for coarse flowers a rough vase



Fig. 1.

of pottery or terra cotta of neutral shade, always without decoration. Decoration on a vase used for cut flowers spoils the artistic effect and detracts from the flowers. I have found the flaring vase which tapers down to a point as seen in Fig. 3, the most difficult of all to arrange. This flaring vase it seems to me should never be used in large size,



Fig. 2.

and in small size should hold but one or two flowers.



Fig. 3.

The very prettiest and most effective that I have ever seen is a plain dark green globe-shaped glass vase (Fig. 4), which I have found in four sizes and wish very much I could find some of still larger size than these. The rich green harmonizes perfectly with everything I have put in it. Flowers look well arranged in silver dishes and vases, if the vases are plain, of simple outline and artistic in design. Ordinarily vases are better if clear or of neutral tint.

All dinner table decorations should be either very low or very high—low enough to look over from one side of the table to another, or high enough to look under. Nothing is more annoying to one seated at table than to dodge about a mound of flowers to catch a glimpse of one's opposite neighbor.

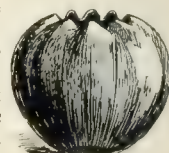


Fig. 4.

Where ribbons are used they must always match either the flowers or the foliage. They may be a lighter or a darker shade, but the color must be the same. Gilt and tinsel are in bad taste, and in fact I have never seen either tinsel, gilt or ribbon used on a dinner table with good effect. A common mistake is in crowding the table with flowers and ferns, leaving no place for the service.

The prettiest dinner table decoration I have ever seen was this. The table was long enough to seat twenty-four guests; it was six feet wide and had oval ends. A margin of eighteen inches of pure white damask was left all around the table upon which to lay the service, and a set of pans an inch deep was made at the tinsmith's



to entirely cover the oval center left after reserving the eighteen inches of margin. These pans were made in sections so that they could be used again upon smaller tables. The pans were filled with little plants, ferns, palms, lycopodiums, etc., none of which were over nine inches high. The shallow pans being in sections were readily arranged first, and then placed upon the table. They also protected the table linen, for the little plants were growing in their own earth and were simply lifted from the pots and arranged in the pans with the higher ones in the center and the lycopodiums, etc., drooping over the edge. In among these were placed some delicate cut flowers, violets, lilies of the valley, small roses, etc.

The only objection to this arrangement was its expense. The day following the dinner the plants were taken back to the greenhouse unharmed by exposure and unchecked in their growth. The whole arrangement was simple, natural and refreshing, and appeared a little garden of thrifty growing plants. It did not obstruct the view across the table.

The late Celia Thaxter in her charming book "An Island Garden" tells how she

[CONCLUDED PAGE 126.]

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arranged cut flowers in her music room. She did it herself every day and in this manner. At 4 o'clock in the morning she gathered her poppies when they were covered with dew, and this ensured their keeping fresh in water for several days. A faded flower was never seen in her vases. If my memory is correct she had thirty-seven vases, all of which she describes—this one for nasturtiums, that one for poppies, several for sweet peas and so on. She liked best glass vases which showed the stems through. She was an artist as well as a true lover of nature and plant life, and the arrangement of flowers in her rooms gave her artistic instinct full play and showed a love of each individual blossom that comes only to those who love plants and flowers well enough to take care of them. She planted and raised her own flowers; no hand but her own touched her garden after it was once spaded in the spring. Can one imagine such a flower lover running an iron spike through the heart of a carnation or binding a lily of the valley to a toothpick with a bit of wire, or combining tulips with maidenhair ferns, or sticking stems of flowers into a basket of moss?

Stiff, set, wired floral pieces belong to a past age. The best people grow less artificial and more simple in manner all the time, and consequently like to be surrounded by natural and graceful forms rather than by that which is formal and conventional. A single fine chrysanthemum in a glass vase showing the clear water and fresh stem, two or three fine specimens of any flower in season, or one fine rose—any of these used with its own foliage is enough decoration for a dinner table for an informal occasion.

This is not the opinion of an expert florist but of a woman who is a flower lover, an amateur grower, who is much interested in the subject and wishes to see flowers used still more in house decoration and for our daily enjoyment.

Chicago, December, 1896. F. M. G.

LANDSCAPE GARDENING.

Referring to the article in GARDENING for November 15 last relative to literature treating of landscape art, I do not see mentioned Edouard Andre's work "L'Art des Jardins." The numerous illustrations would be interesting and instructive to all, and the text equally so to anyone with a fair knowledge of French.

It is probably the best modern treatise on the theory and practice of landscape gardening. CHARLES N. LOWRIE.

MUSHROOM BED OVER-DRY.

I have followed instructions contained in the book entitled "Mushrooms, how to grow them," and have made up and spawned a bed of about one hundred and fifty square feet in my cellar. But I find now that the manure five days after spawning seems too dry; although damp it will not stick together when squeezed in my hand. The bed rose to 110° and I spawned it after it had fallen to 96°. The manure is about 9 inches deep and shows a temperature of 80° now at a depth of 4 inches. Please say whether this dryness can be remedied and how, and what chances are for crop in its present condition. C. J. B.

You cannot expect to get a good crop of mushrooms from an over-dry bed. Better throw up the manure into a pile again, wet it and let it ferment and then use it.

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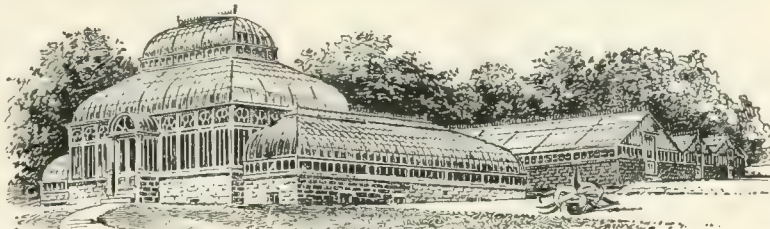
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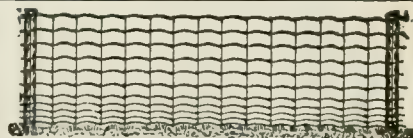
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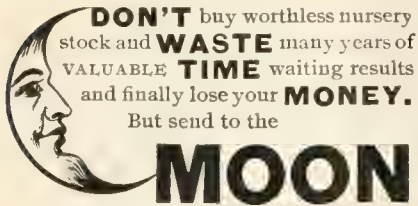
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No. 105.



GIANT BAMBOO. CEYLON.

[To gain an idea of the great size note the native standing near the base of the clump.]

Tropical Vegetation.

A GIANT BAMBOO.

(*Bambusa dendrocalamus*.)

The generic term *bambusa* is derived from "bambu," the Malay name applied to it. The English speaking race have substituted the *oo* for the *u* and we call it bamboo. It is classed among the grasses and is remarkable for including species that range in height from *B. Fortunei*, a dwarf tufted form growing about

forms and can be carried through our winters under protection. The specimen illustrated is one of the Asiatic species, now growing in the botanical gardens at Ceylon. We could not ascertain its height but a comparison with that of the native standing some distance in front to the left will give some idea.

GARYOTA URENS.

(*Fish-tail Palm*.)

We illustrate a beautiful specimen of this palm in bloom in the botanical gar-



THE ENGLISH IRIS.

twenty inches high, to *B. aspera*, of the Indian Archipelago, which, according to Von Mueller, attains a height of one hundred and twenty feet.

Its rapidity in growth under favorable conditions have been noted by observers. *B. balcooa* was found by Wallich to grow twelve feet in twenty days. *B. tulda*, according to Roxburgh, has grown at first at the rate of twenty to seventy feet in a month. Fortune noticed some Japanese forms to grow two and a half feet in a day.

The purposes to which the bamboos are applied in the social economies are well known. Costa states that some stems are thick enough to serve for canoes when split.

There are but few if any of the species that can be grown successfully in the colder part of our country. *B. Metake*, a Japanese species now classed as *Arundinaria Metake*, is one of the hardier

dens of Ceylon. This species is one of a dozen known as the fish-tail palm, on account of its leaves resembling the fin or tail of a fish. It is a native of India and is considered one of the hardier palms, it being found ascending the Himalayas to an altitude of 5,000 feet where the temperature sinks at times to 40° Fahrenheit.

It is probably one of the largest of the genus, reaching a height of fifty feet, and does not bloom until maturity, when after producing a succession of flowers, it dies away.

In economic uses it plays its part. From the sap of its flowers toddy and palm sugar are produced, and from the fibre of the leaf-stalks rope, baskets, brushes and brooms are made.

When in a young state this palm is often used in table decoration and is much valued as a specimen palm in conservatories.

The Flower Garden.

ENGLISH IRIS.

(*Iris Ziphoides*.)

The illustration here given is from a photograph taken June 14 last year of a few blooms of the English iris. The term English iris is misleading, inasmuch as it is a native of the Pyrenees and happened to reach Holland via England. This name, given it by the Holland bulb growers under the impression that it was indigenous to the British Isle, is recognized even in England as its common one. While the Botanical name here given in the heading is the one used by Nicholson's Dictionary of Gardening, it is often spoken of as *Xiphion latifolium*. Whichever is the accepted term matters not as it will probably always bear the common one among the people.

It is certainly a beautiful flower, and it is a wonder it is not grown more by the florists for cut flowers. When cut just before the flower opens, or even some time prior, it develops fully in water and is a good keeper.

It is easily grown, requiring a rather light soil, well drained. It does not like over moisture in the winter so that it must not be planted where water will stand during that season. It is not considered over-hardy in our climate and really requires a light mulching put on in the fall. A mulching of half-rotted leaves does well as it can come up through it in spring without harm.

Choose a sunny position sheltered from the winds, and plant in your cutting grounds or in rows about eighteen inches apart, where you can plant annuals in between, as during the summer months the leaves die down and leave the ground bare.

There are various colors and markings represented in the different named varieties. The one illustrated is the white Mont Blanc. King of the Blues is a rich purple violet, and there are other equally as handsome. W. C. E.

HERBACEOUS PLANTS FOR DRY SITUATIONS.

Herbaceous plants as a class are very accommodating, we can make selections for every conceivable situation; be it wet or dry, sheltered or exposed, cold or warm, sunny or shady, there should be no difficulty in finding the right thing for the right place among the many hundred species of hardy plants, and an attractive border may as well be laid out on high and dry ground on a hillside as in low and damp places. The immense difference in size and height also is not equalled by any other class of plants, nor is such great variation in form and size of foliage or flower found anywhere else; we have tiny little flowers not any larger than the head of a pin, as for instance in the *Sagina pilifera* or in *Gypsophylla paniculata*, while others are of immense size and possess the boldest characteristics.

But it is particularly of suitable plants for rather dry situations I shall speak about to-day. On large private places or even in many commercial establishments it is not always possible or convenient to attend to the watering of borders, and the necessity of leaving the plants to their fate in all sorts of weather may be followed by serious disaster. Should we plant indiscriminately, many of the plants would succumb to a prolonged dry spell, they would probably not die right out, but their wilted appearance would entirely spoil the effect of the whole plant

THE FISH-TAIL PALM (*Caryota urens*) FRUITING. CEYLON.

ation, therefore a selection of such plants only should be made which will endure the prolonged drouth without losing their vigor. However, after making the right selection nobody must imagine that he may stick in these herbaceous plants in any place and then have them grow and flower without further preparation or care at all. In the first place the borders or beds must in every instance be deeply and thoroughly prepared, well enriched

with old manure, before the different species of plants can be permanently planted; we have to bear in mind that the soil in the bed has to support these plants for many years. The work of preparing the border and planting should be performed either early in autumn or as soon as spring opens and before the weather gets warm enough to start the plants into growth; the earlier the better. The plants should get a fair start while the ground is yet in

a moist condition and therefore a heavy mulching over the whole surface for the first summer will be found a great benefit to a vigorous start, especially if planting has been delayed until spring.

By far the largest part of our borders is rather dry and watering is out of the question, except perhaps in a few instances around or near the house and then only in prolonged dry weather. For years I had opportunity to watch the

plants in these borders and by observation have gained a fair knowledge of the action of drouth on a great variety of plants and it is astonishing in some cases how well some of our so called moisture loving plants will endure under these adverse surroundings.

Take for instance the *Monarda didyma* or *M. fistulosa*, both of these should be grown along the water's edge or in moist places, but here in stiff hard-baked soil they bloom freely nearly all summer, the only perceivable difference being the shorter and compact growth and closer set leaves along the stems, yet I should hesitate to recommend them for the very driest situations where the many species of sedums and sempervivums would only flourish. Close to or intermixed with the sedums we can safely introduce *Linaria*

height than 10 inches, are in bloom all summer and autumn; in shape the flowers resemble a small wild rose and their color varies from a light yellow or white to a dark carmine pink.

Yuccas of several varieties will be found to succeed admirably well and *Galtonia candicans* may be planted anywhere and it will produce its tall flower spikes in dry places as well as in any other quarters, neither have I ever noticed any ill effects on the foliage caused by drouth. *Carlina acaulis* is a most interesting dwarf plant; it has small thistle like foliage of a deep glossy green color, the leaves lay rather close to the ground; the almost stemless flower springs from the heart of the rosette formed by the leaves and is really a curiosity; I have one before me now, a dried up specimen, but pretty still, picked

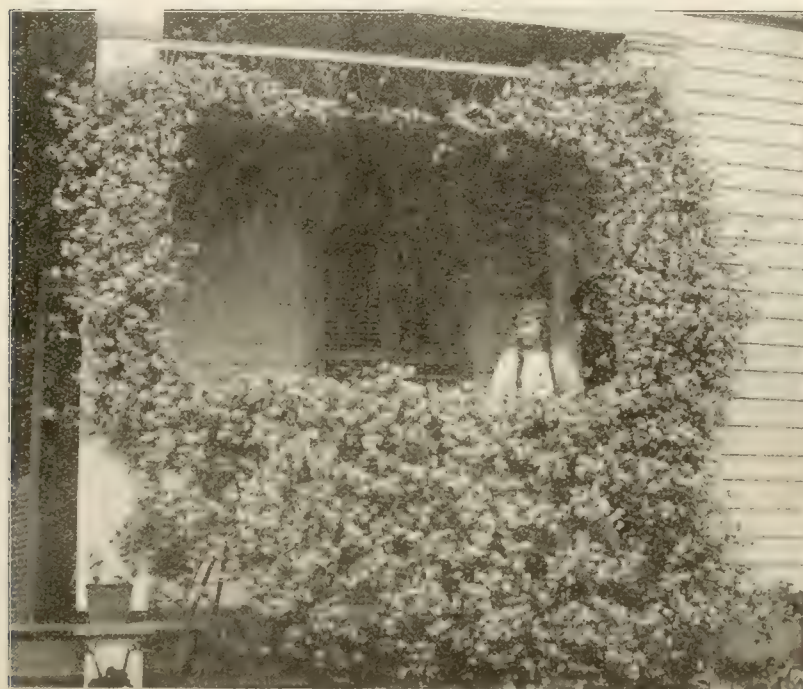
spoke lately, does as well here as anywhere, and there is no danger whatever of losing it by excessive dryness after the plants once take hold in the soil.

The creeping *phloxes*, *subulata*, *amœna*, etc., all do well here and retain their bright green foliage in the burning midsummer sun without the application of water. *Callirhoe involucrata* will send its taproot away down in search of moisture and keep on blooming and growing all summer, yet, to make a show of them, the plants require age, young stock always looks spindly in dry places for several years. *Asclepias incarnata* seems to be able to live without water entirely; even on knolls under trees where rain seldom reaches them, they will form good specimens and flower profusely every year. The large flowering *Inula grandulosa* and also the lower and more branchy *I. hirta* are both good subjects for dry banks and borders and their deep yellow flowers are so bright that they can be seen from a great distance. Another good yellow flower is the almost continuously blooming *Heliopsis Pitcheriana*; they never wilt in the severest drouth and the individual flowers last for a long time. *H. laevis*, a lighter yellow, is also good.

Platycodon (Wahlenbergia) grandiflorum will probably not always do as well the first or even the second season; the large blue or white flowers would fade and shrivel up too soon after opening, much sooner than those in more favorable situations, but time will remedy this defect if we leave them alone, as the thick and fleshy roots increase in size and reach the cooler subsoil, then hardly a difference can be noticed between those in either border. *Enothera Youngii* and *O. Fraserii*, the lovely, large, bright yellow blooming evening primroses, of dwarf and compact growth, may be planted there together with the white flowering sorts *O. speciosa* and *O. taraxacifolia*. *Anthemis tinctoria* and *A. tinctoria Kelwayii* will only show the want of moisture in their more compact growth and probably somewhat shorter flower stems.

Heuchera sanguinea we have had for years in a very light and dry soil, but it does not suffer in the least here; the flower stems are just as long and full of little bells as those on the plants grown under other conditions, but the petioles of the foliage are shorter. *Centaurea montana*, *C. montana alba* and *C. montana rosea* make a fine growth in the early part of the season and begin to bloom earlier in the dry ground and keep up a succession better than in a moister situation; the growth is more compact and loses the weedy appearance which it sometimes assumes in rather rich and moist borders. The tall *Cassia marylandica* may not find favor with everybody, yet I say it is very graceful and ornamental if introduced in the right way; it seems to subsist on nothing, for the stems are 5 to 6 feet high in the driest place of the patch; the tops are ornamented for a foot or more by pretty yellow flowers forming an attractive panicle. *Centranthus ruber* and its white variety do admirably well and never show signs of wilting; they are in bloom so long and require very little care aside from an occasional removing of the old decayed flowers. Even some of the asters like *A. corymbosus* and *A. amellus bessarabicus* will not succumb to the dry and perhaps to them unnatural surroundings.

But I must come to a close, for when I sat down to write this article I had no intention of making it very long; as it is now before you I am afraid that some of



RHYNCOSPERMUM JASMINOIDES.

trionithophora, a pretty purple species blooming all summer, or *L. dalmatica*, a large yellow flowering sort, bearing very loose, long panicles and the most robust and tallest (3 feet) grower I know of. *L. purpurea* is also a fine one, with light bluish purple flowers, produced in profusion from June to September, height about 2 feet.

All the perennial *linarias* may be used to advantage, as they bloom for several months in midsummer and require but very little moisture. *Antennaria tomentosa*, and *A. margaritifera*, the former a very dwarf and compact growing subject with silvery white little leaves, it never grows higher than 2 inches and forms a dense cushion over the ground. I have not seen this plant for many years and do not know of its existence here in our country. The other is a taller grower with white corymbose flowerheads and leaves covered with a white tomentum, narrow and oblong; a good sized patch of it shows to advantage in the border. *Helianthemums* of the *vulgare* varieties, single or double, when once fairly established will grow and flower in the driest situations; they are lovely little evergreen plants, not strictly herbaceous but shrubby and seldom attain a greater

height than 10 inches, are in bloom all summer and autumn; in shape the flowers resemble a small wild rose and their color varies from a light yellow or white to a dark carmine pink. *Yuccas* of several varieties will be found to succeed admirably well and *Galtonia candicans* may be planted anywhere and it will produce its tall flower spikes in dry places as well as in any other quarters, neither have I ever noticed any ill effects on the foliage caused by drouth. *Carlina acaulis* is a most interesting dwarf plant; it has small thistle like foliage of a deep glossy green color, the leaves lay rather close to the ground; the almost stemless flower springs from the heart of the rosette formed by the leaves and is really a curiosity; I have one before me now, a dried up specimen, but pretty still, picked

outdoors in November; it is a very large flower for such a small plant; around the disk, which measures 2 inches in diameter, there is a row of closely set ray florets, silvery white, shiny and of a papery texture; the size of the whole flower is not less than 5 inches in diameter. This plant is not difficult to establish and may remain in the same position for many years, spreading out slowly but forming more rosettes of leaves every year; it usually blooms in the summer months, but sometimes a few flowers will come out in the late fall as was the case this past season. *Stachys lanata*, in a dry place has smaller and more cottony white foliage and is a good plant to intermix with early dwarf iris, which succeed wonderfully well under these conditions, as also do the German iris, for they all flower before the real hot and dry weather sets in. For a low creeping plant with yellow and brown-red flowers during the earlier part of the season *Lotus corniculatus* may successfully be introduced; it forms close fine carpets over a considerable space in course of a year, and *Astragalus hypoglottis* has the same low creeping habit, but larger sized flowers, pale purple or white in color. That grand and rare plant, the *Ethionema grandiflorum*, of which I



FATSIA OF ARALIA PAPYRIFERA.

the readers might get weary and not find it interesting enough to read it all through, but there are so many different deserving plants which I found to endure our driest summers under adverse circumstances, and so perhaps I may find an excuse in the eyes of some of the readers for enumerating a few of them at random.

Rochester, N. Y. J. B. KELLER.

CONFEDERATE JASMINE.

(*Rhyncospermum Jasminoides*.)

I send a view which may be of some interest to the readers of GARDENING. It is a specimen plant of *Rhyncospermum jasminoides*, but is commonly known throughout South Louisiana as "Confederate jasmine." Although it is not what might be called a rapid grower, it propagates quite readily from cuttings. The view shows a vine, three years old, which from April until July is covered with a

mass of very fragrant white star-like blossoms. It also holds its foliage throughout the year, and its rich dark green color is very pleasing.

Being such a desirable climber, it deserves a prominent place around the home galleries. This particular view was taken at the home of Gen. Jno. McGrath, Baton Rouge, La. [This plant is grown extensively in northern greenhouses, where it comes into bloom about the same time as do azaleas and rhododendrons. It requires cool treatment.—Ed.]

F. H. BURNETTE,
State Expt. Station of the L. S. U. & A.
& M. Col.

FATSIA OR ARALIA PAPYRIFERA.

Mr. W. R. Smith, of the Botanic Garden, Washington, has kindly furnished us with the following information regarding the subject of our illustration:

This plant produces the beautiful substance known as rice paper; it has soft, downy palmate leaves; it grows ten feet high, with a stem four inches in diameter, full of white pith like the elder; in a full grown specimen the pith is about one inch in diameter. It is divided into pieces three inches long, and by the aid of a sharp instrument is unrolled, forming the thin narrow sheets known as rice paper, greatly used by the Chinese for drawing figures of plants and animals, and also for making artificial flowers. Until about 1850 the source of this substance was unknown to scientists. The Chinese on inquiry, gave very fanciful figures and descriptions of it, illustrating the fact that then, as now "for ways that are dark and for tricks that are vain, the heathen Chinese is peculiar."

It was first introduced from the island of Formosa to Europe, at Kew gardens, in 1853; from there it has been widely



PLAN FOR A SUBURBAN LOT 232X160 FEET.

disseminated. It is almost naturalized in some parts of Australia. In the southern states, and perhaps California, it will flourish. As an outdoor ornamental foliage plant it is well worthy of cultivation in any section of the country.

It is destined to be a peoples' plant as one-half inch of the root will grow and form a good plant the first season. It has survived most winters for the past five years in this city (Washington, D. C.).

ROSA MULTIFLORA JAPONICA—CLEMATIS.

Where can I get plants of *Rosa multiflora Japonica* described in a recent issue of GARDENING?

How can healthy plants of *Clematis Henryii* be obtained? Effort after effort of mine has failed. Can I get seed and so raise healthy plants?

Baltimore. DESPAIRING AMATEUR.

Rosa multiflora Japonica can be obtained from Ellwanger & Barry, Rochester, N. Y. and Storrs & Harrison Co., Painesville, O., and probably from other advertisers in GARDENING. We happen to know that both the above named firms have stock from the plant illustrated.

The question 'how can healthy plants of *Clematis Jackmanii* and *Henryii* be obtained,' is one that even the largest and most experienced raisers would be glad to have answered. There are a number of old plants scattered here and there over the country, planted at a time when the disease that now causes so much havoc, did not seem to be so prevalent, that seem perfectly free from it and there are also plants that seem to have out-

lived any tendency towards it. A good plan to pursue where one has the room, is to obtain several plants, and for a few years grow them in a trial ground until one or more shows a disposition to overcome the trouble, and when strong enough carefully remove them to their permanent quarters.

Scientists have held this trouble to be the work of a fungus. It is said that in Germany experiments have been carried on for some time in hopes of finding an effective cure, but so far without success. One scientist there puts forth a new theory, claiming that the trouble is caused by a fly depositing its egg upon the stem.

Wm. Thompson, Ipswich, England, advertises in his catalogue seeds of *C. hybrida*, hybrids of *C. Jackmanii*, but as it takes from six to twelve months for these seeds to germinate, and then some time before they amount to anything, it hardly pays to bother with it. As a rule the clematis is increased by grafting on to *C. flammula* or some of the hardier forms, and by layering.

FESTUCA GLAUCA is an ornamental grass from southern Europe that is not in common use, although it lends itself readily to garden work. It makes a very neat border along walks, and can be used effectively in ribbon gardening or in rockery work. It forms a glaucous tuft of grass about six inches high, not spreading rapidly, and always neat and tidy in appearance. It is perfectly hardy and increases readily by division either in spring or autumn. Its seed stalks are not ornamental and should be clipped off when in bloom.

Landscape Gardening.

PLAN FOR A SUBURBAN LOT 232X160 FEET.

It is usually thought that the small suburban place is unworthy of the landscape gardener's skill, but I think the accompanying plan made for Mr. Chas. D. Armstrong, of this city, proves the contrary. This plan gives what is not always found in larger places, small but good lawn effects, a considerable variety of choice plants and shrubs, changing effects from spring until fall and out-door privacy for the family and its friends, and I hold that privacy is as desirable in the grounds of a home as it is in its living rooms. The common mistakes in planting small suburban places are the cutting up of what little lawn there may be with formal beds for bedding plants, the planting of too many large shade trees, which makes the best results with grass, shrubs or flowers impossible, and the irregular dotting of shrubbery all over the grounds. By massing the shrubs a far greater variety and quantity can be grown and much better effects produced.

The present plan ignores bedding plants, but ample space is provided for hardy herbaceous plants, spring flowering bulbs, summer blooming bulbs and annuals in the flower garden which is isolated as much as possible from the balance of the grounds and is intended to provide plenty of flowers for cutting from early spring until late fall.

The walks between the beds are to be grass ones, which are much more pleasing

in a garden of this character than if they were gravelled. Along the back of the grounds, which is the western side of the lot, extends a tight board fence. This is to be covered with hardy flowering vines, principally clematis, and in front a long border is made for hybrid perpetual roses, which gives them an eastern exposure and protection from the west.

EXPLANATION OF PLAN.

1. *Magnolia soulangeana*.
 2. *Magnolia conspicua*.
 3. Rose flowered weeping Japan cherry.
 4. Flower garden with beds for herbaceous plants, spring flowering bulbs, summer-blooming bulbs and annuals, with grass walks between beds.
 5. *Malus florabunda*.
 6. *Magnolia stellata*.
 - 7, 7, 7, 7, 7 Shrubs deciduous and evergreen planted in masses with groups of strong growing herbaceous plants and lilies in the margins.
 8. Japan snowball.
 9. Pin oak.
 10. *Malus toringo*.
 11. *Exochorda grandiflora*.
 12. *Magnolia Lenzii*.
 13. Group *Kalmia latifolia*.
 14. Group *Berberis Thunbergii*.
 15. Group *Rosa Wichuraiana*.
 16. Group *Kalmia latifolia*.
 17. California privet hedge.
 18. Japanese maples.
 19. *Malus Parkmanni*.
 20. Specimen rhododendron.
 21. *Magnolia stellata*.
 22. White-leaved weeping linden.
 23. *Magnolia parviflora*.
 24. Cut-leaf birch.
 - 25, 25, 25, 25. Posts for clothes line.
- J. WILKINSON ELLIOTT.
Pittsburg, Pa.

Trees and Shrubs.

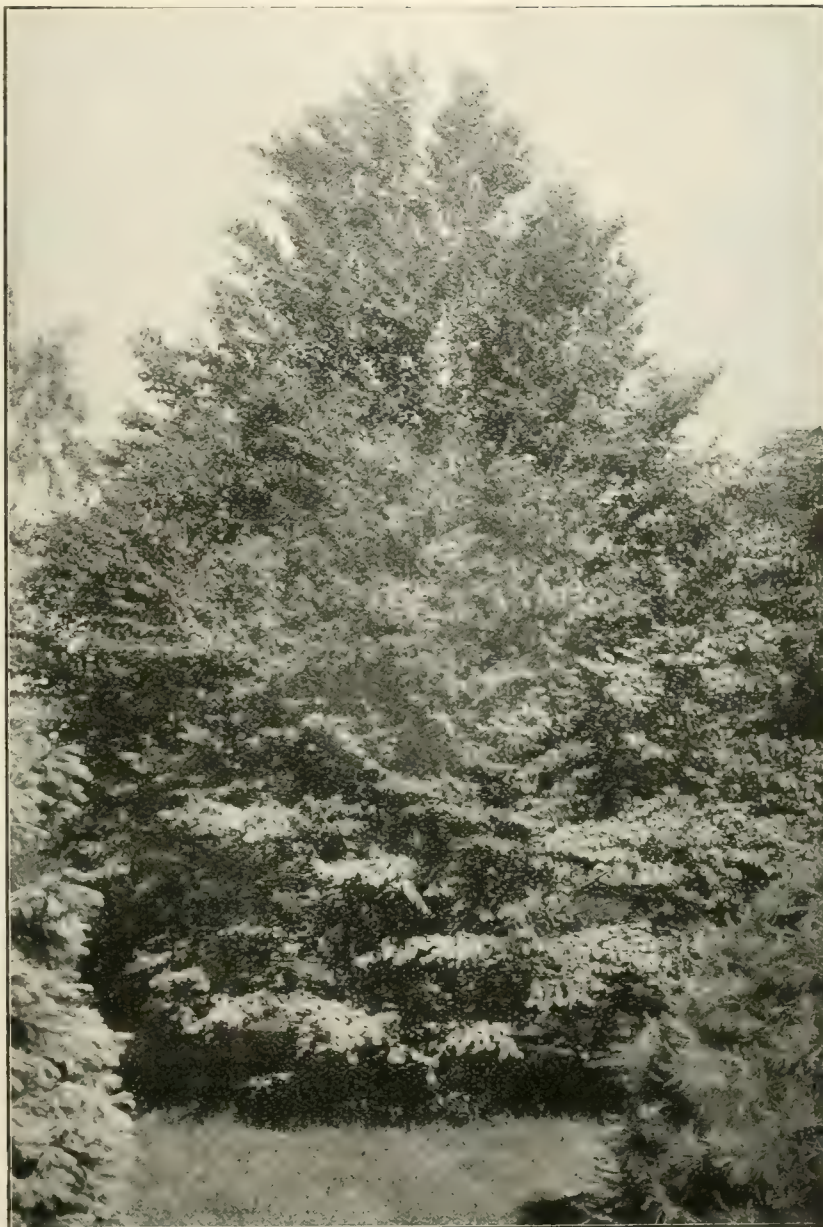
CERCIDIPHYLLUM JAPONICUM.

This is a Japanese tree of recent introduction into our gardens and but little known among us. Although it is one of the commonest forest trees in its native country and we have had it in cultivation here for most twenty years, and occasionally find it in pretentious and connoisseurs' gardens, it isn't at all a common tree in this country and is never likely to be. As with *Koelreuteria paniculata*, that beautiful little Chinese tree, so is it with this Japanese handsome giant, its ungainly name will ever kill its popularity as a garden plant.

Cercidiphyllum Japonicum is the only species of the genus. It is the largest and one of the most important deciduous trees of Japan where it inhabits the foothills of Yezo, and the high mountains of the more southern islands, and it has recently been found in China. In its best estate it reaches a height of 100 feet, but seldom in clear shaft-like trunks, it rather breaks into several branches near the ground and these reach up in large trunk proportions.

The tree has a tall, slender, much-branched form, and is well clad with red-bud-like foliage which it holds well throughout the year and which assumes a crimson tint in fall. Although it is nearly allied to the magnolias (its family name is *Trochodendraceæ*) and mature specimens flower freely there is no beauty at all in its blossoms, it is simply an elegant tree with pretty leaves, and we have never known it to be touched by insects.

In cultivation here it is very hardy and



CERCIDIPHYLLUM JAPONICUM.

it usually assumes a pyramidal form more or less acute, sometimes it is almost columnar, and not infrequently broad and round headed; you will find an illustration of a tree of this latter shape in that lovely Dosoris picture in GARDENING, page 5, September 15, 1892. We had some plants on high, dry ground, but they refused to be comforted so we transplanted them to a lower situation where the ground was deep, friable and moistish, and there they grew admirably. Like many of our Japanese plants it is a shallow rooting tree, hence unfitted for cultivation in hot, thin, dry soils; give it rich deeply worked soil and plenty moisture if you wish to see it in its most elegant thrift and beauty. It is always branched to or near to the ground, therefore well adapted for a lawn side specimen, but of little avail as a street tree. Another point, it dislikes contact with salt water. At Dosoris there was a beautiful pyramidal specimen that an unusually high tide reached out to and killed, whereas oaks, beeches, silver thorn and some other trees whose roots were inundated at the

same time showed no evil effects from the Atlantic brine. It is readily increased from seeds imported from Japan, or from cuttings.

WILLIAM FALCONER.

PRUNING EVERGREENS TOO CLOSE.

As early spring is approaching rapidly and it is the proper season for pruning evergreens, a few hints on the subject at this time will be appropriate. It is known to many who have had a great deal of planting to do that in the planting of deciduous trees late in the spring, after they have pushed into leaf, while proper to shorten in the young shoots considerably and to partly defoliate them, it is almost certain death to them to strip off every leaf. They certainly do very much better if a few leaves are left undisturbed.

And though but few ever give it a thought, it is just as true in the case of evergreens. Evergreens shed an annual crop of leaves in the fall, just as deciduous trees do. The difference is that there is

always a living crop of leaves on an evergreen, a later one than that which falls. There are two or three crops of leaves on the tree at one time. It is because of there being so many on at once that so many errors are made in the pruning of them at transplanting. The knife is used freely, the branches are clipped in quite close and, as there appears an abundance of foliage below the cut, everything is thought to be right. Pretty soon this closely pruned tree dies, and then perhaps the operator may learn the fact that he had cut off every living leaf, those he had left being old ones which were about to drop.

The foliage which drops about October is practically useless for weeks before that, so that an evergreen sheared of all but this is in just the same plight as a deciduous one stripped of its leaves in late spring, and it dies. It is as effectually killed as it would be if sawed off to the bare trunk. Besides this all that have had to work among evergreens know that unlike deciduous trees they rarely make new growth from old wood. There is no doubt that too severe a trimming of many an evergreen hedge has caused permanent injury to it, as the close cutting has to many a transplanted specimen. I have seen more than one arbor vitae hedge cut back below its foliage, never to become green again, and I regret to add that instances of dead arbor vitae hedges in which bag worms had been permitted to eat off the foliage, are far too numerous. An arbor vitae so denuded of foliage is of no further service, and may as well be dug up and burned.

As the season for transplanting as well as for pruning will soon be here, efforts should be made to do the work carefully, that close pruning may not be called for. Do not cut below the living foliage; and keep this in mind whether it be a case of transplanting, or the pruning of a specimen or a hedge.

JOSEPH MEEHAN.

Philadelphia.

GINKGO BILOBA.

(Maidenhair-tree.)

It seems singular to me that so beautiful, and at the same time so interesting a tree as the ginkgo should not have been more written about in GARDENING than it has. It occupies a peculiar station in the classification of arboreal life, being as it were, half way between the coniferous and the deciduous trees, possessing characteristics of each.

It is a monotypic genus, as if the Creator was so satisfied with its beauty that one representative was enough. Its habitat is northern China and Japan, where it attains a height of sixty to eighty feet according to Nicholson, but Von Mueller describes it as "A deciduous fan-leaved tree, one hundred feet high, with a straight stem twelve feet in diameter," and he further states that they "are estimated to attain an age of three thousand years." Mr. Chrysty says "it is the grandest and most highly esteemed tree in Japan." Fortune states that "the seeds are edible and when pressed yield a good oil. The fruits, sold in China under the name of 'Pakoo,' are not unlike dried almonds, but white, fuller and rounder." The wood is soft white, and takes a beautiful polish.

This tree is often catalogued as *Salisburia adiantifolia* and is so known in many gardens. When established in a well drained soil its growth is rapid and the tree is at first inclined to be pyramidal in form. Meehan advises cutting several times when young to make a

compact, round-headed tree. In this country we have a fastigate form which grows in a dense columnar shape, quite picturesque in its way. England claims to have a weeping variety and also one with variegated leaves.

The common name "Maidenhair tree," given it on account of the resemblance of its leaves to one of the ferns, has been taken advantage of by the irresistible tree agent, who is well aware of the fondness of the gentler sex for the immeasurable beauties of fern life, and I can recall one instance where one so convincingly described the beauties of a real live tree bounteously clothed with maidenhair fern leaves, a thing so rare that but few had reached us from Japan, that a lady paid this scamp fifteen dollars for a nursery scrub. True, he promised that it would live, and it has, but it were better it had died, as she obtained a cripple that will remain one as long as she lives. The tree is not an expensive one and had this lady sent her order to any responsible nursery she would have obtained one for a dollar that would be an ornament to her grounds by this time. W. C. EGAN.

VITIS COIGNETIAE.

This ornamental grape vine has caused considerable comment in England on account of its beautiful coloring in the fall.

One writer describes the variations of color as "very rich and extensive," turning "to yellow buff, orange and purple, the purple becoming crimson before the leaves fall." And further states that no two leaves color in the same manner.

Another writer, however, states that its coloring is no more brilliant or effective than the American *Ampelopsis quinquefolia*, our common Virginia creeper.

Undoubtedly this vine is a valuable acquisition in the moist climate of England and Ireland, but whether it will retain this characteristic of intense coloring in the drier atmosphere of the United States is yet to be determined. Several vines have been grown here during the past few years and it would be interesting to the readers of GARDENING if their owners would give their experience with it. It is a native of Northern Japan and grows abundantly in the low woods near Hakodadi, where there is abundant moisture, especially during the fall months, and its habitat being so near the coast enables it to receive considerable moisture at other seasons from the sea breezes. It would be well worth trying this vine in the regions around Puget Sound.

Should it prove hardy in the northern states there is a future before it even in the absence of the splendor of its fall coloring, as it is a rapid grower and under good culture produces leaves eleven inches long and fully as wide. It is named in honor of Mme. Coignet, of France, who brought the plant to the notice of the French people. M. A.

SHRUBS FOR SMALL PLACES.

A subscriber residing in Ohio asks this question: "What shrubs would you suggest for people of moderate means, whose places are small and who have but little time at their command to give them special attention?"

In answering that question, where the number of species is limited owing to the small area at disposal, one's preference for particular shrubs is apt to assert itself, but the inquiring party can change the relative position of those mentioned, as in fact any and all are choice garden shrubs.

The requirements demand unquestionable hardiness, freedom from blight and a robust constitution. After these should come their ornamental value, either in flower or foliage.

Were my grounds so small as to admit of only one shrub, I would make it a compound one, and in a generous-sized hole set two plants of *Rosa rugosa*, one pink and one white flowering form, planting closely together so as to form one shrub. I select this rose because from early summer until long after the earlier mild frosts it is in bloom, and during the latter half of the season its large brilliant hedges further enhance its beauty. The heavy, rich-looking, dark green, wrinkled foliage is in itself interesting, and forms an enchanting setting for its large sweet-scented single flowers. I use the two forms because while making a symmetrical bush both colors are obtained.

Had I room for another I would choose *Spiraea Van Houttei*, whose long arching pendulous branches are so thickly clothed in June with small white flowers as to make a fleecy mass, and whose foliage turns to pleasing tints in the fall.

If still another I would add *Hydrangea paniculata grandiflora*. The large trusses of white flowers would add a fall bloom to my limited garden, but I would find time somehow to give it the copious watering it so delights in.

In increasing the list from now on it is very difficult to place one ahead of another, all are equally good. Any good catalogue describes them accurately:

Cerasus Japonica var. *rosea pendula*.

Prunus triloba.

Philadelphus coronarius.

Philadelphus Gordonianus.

Philadelphus speciosissimus.

Syringa villosa.

Berberis Thunbergii.

Hypericum aureum.

The last two are quite dwarf and will grow in partial shade.

There is only one lilac in the list (*Syringa villosa*) and that a late bloomer and lacking the fragrance of the common forms which are omitted on account of their tendency to mildew, better grow them in a back yard for their cut flowers.

W. C. EGAN.

THE TULIP TREE.

(*Liriodendron tulipifera*).

Our northern forest has no more beautiful large tree than this member of the magnolia family. In some sections it is known as the white-wood, and in others as the tulip tree. It bears a botanical name in which the rhythm is most pleasing, *Liriodendron tulipifera*. The literal translation of its generic term is "lily tree" and "tulipifera" means tulip-bearing. The large tulip-shaped, fragrant flowers appearing in June readily suggested this.

The leaves are large, fresh looking and most singularly lobed, their peculiar form having given rise to a local name in some places of the "fiddle-tree." Their fall coloring is a pleasing yellow.

It is in the winter season that its handsome, evenly-tapered trunk, especially in young specimens, can be admired. Its bole is smooth and round and its surface beautifully striated by lines of a lighter shade than their immediate surroundings. The whole aspect it presents either in summer or winter is that of an elegant clean tree.

When established its growth is rapid and in time it becomes a very large tree. It is not easily transplanted unless quite young, and then its removal should only



VICTORIA REGIA HOUSE, SCHENLEY PARK, PITTSBURG

be attempted in the spring. Specimens three to four feet high, well cut in, are the safest to move. Some people use older trees, and cut them to the ground, allowing one shoot to come up, but smaller ones as above indicated are preferable.

M. A.

Aquatics.

TROPICAL WATER LILIES AT SCHENLEY PARK.

Our illustration has been engraved from a photograph of a corner in the *Victoria regia* house taken end of October. This house is a curvilinear, iron frame, octagonal structure 50x50 feet. The tank occupies the whole middle space except room for a side bench, a concrete pathway, and a narrow marginal belt of earth; the top of the tank is on the ground level, a mistake I think, for I would rather have it about ten inches higher. The basin is of concrete two to three feet deep and it is provided with feed pipes for cold and hot water, and overflow and drain pipes. Fresh earth is used every year. This year the soil consisted of rotted sod and old cow manure, say two-thirds of the sod and one-third of the manure.

The victorias were raised from seed sown last January and the seedlings were grown along in shallow tanks on the bench of a warm greenhouse till April when the tank was prepared for them and two plants set out in it. These plants grew luxuriantly and one of them

had its first open flower May 10, the second bloom opened on May 18, and ever since then till the last week in October we had one or two flowers open in that tank all the time. The leaves grew fine, and some of them measured 6 feet 9 inches across, in fact the pond has looked so pretty all along that even now, December 26, it is one of the prettiest features of the conservatories.

Although the victorias have ceased blooming and their big leaves are gone, the wealth of luxuriant plants around the pond, the side vegetation running into the water, and several nymphæas still in flower, give it a very pleasing effect indeed; and both plants of the *Victoria* have got quite a mat of pretty fresh leaves floating on the water.

By the way we have saved about a pint of seed of the *victoria*, so if any of our friends are short of it we shall take pleasure in helping them.

POINTS WORTH NOTING.

The *victoria* likes warmth, but plenty fresh air from the top of the house; it likes sunshine, hence the glass should be clear; it likes fresh water, hence we keep a little stream from a faucet running into the pond all the time; it loves rich soil and this is why we used so much manure in the compost, but don't use horse manure.

The vegetation around the basin consists of caladiums, colocasias, cyperus, crotons, curculigo and in fact odds and ends of most any tropical plants we had; they were planted out into the border of ground around the pond, and the heat and water and hosing forced them into a tropical luxuriance never seen in pot

plants; tradescantias and the like carpeted the ground, and limncharis, pontederia and the like ran into the water, covering the stone curbing, but we never allowed it to obliterate the water nor crowd out the handsome lilies. A piece of clean clear water in a pond is just as necessary as is a sweep of open grass on a lawn.

Another adjoining greenhouse, a curvilinear span roofed structure 84x30 feet, was devoted to nymphæas, and the soil and cultivation was much the same as in the case of the *Victoria*.

WILLIAM FALCONER.

Orchids.

THE VANILLA BEAN NOT A BEAN.

The only orchid of economic value is the vanilla, which derives its name from the Spanish word "vainilla," signifying a little sheath, in allusion to the shape of the fruit. While the fruit of several of the species may be used as flavoring material the vanilla bean of commerce is from the *Vanilla planifolia*. Its native home is Mexico and tropical America. *Popular Science News* states that "when the plants were first introduced into the West and East Indies they grew vigorously and produced an abundance of flowers, but no pods. It was discovered that the particular moth which fertilized the flowers in Mexico was absent from its new home, and artificial pollination was resorted to, after which the plants produced abundantly."

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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A FOX GLOVE in an English garden produced a flower spike nine feet high with side shoots at the base six feet long. Nicholson gives its average height at three to five feet.

THE ARAUCARIA EXCELSA, the Norfolk Island pine, now quite commonly used for house decoration, is said to sometimes attain a height of two hundred and twenty feet with trunks ten feet in diameter. Its timber is useful in ship building.

IF WHEN SETTING POSTS in the ground for climbing roses or any permanent purposes, you will shave off the bark and paint that portion going under ground with linseed oil in which very fine charcoal is mixed so as to make a thin mush, letting it dry thoroughly and again painting it, your post will last much longer.

EUNONYMUS ALATUS is, in many ways, an interesting shrub. It is interesting in its curious "wings" extending down the stems, interesting in its oval shining berries produced in a peculiar fashion, and extremely interesting when clothed in the scarlet robe of its autumn colors; and withal is perfectly hardy and easily transplanted.

ROSA CENTIFOLIA, the old "hundred-leaved" cabbage rose of our gardens, is grown in southern Europe and Asia for the distillation of rose water and oil, or attar of roses. The flowers are gathered before sunrise. From twelve to sixteen thousand blooms, equalling two hundred and fifty to three hundred pounds of rose petals, are required according to some calculations to produce a single ounce of attar.

OUR NORTHERN yellow locust, *Robinia pseudo-acacia*, is one of the best trees to plant in very sandy soils. Its wide spreading roots push out in all directions covering a wide area. Owners of sandy beaches who experience difficulty in retaining them against wind and wave should try this tree, as a net work of its roots would have a tendency to retain the sand. It should be well cut back when transplanted.

IF YOU WANT your herbaceous pæonies to look neat next summer, have made this winter galvanized iron hoops with three legs fully two and one-half feet long, the latter one-quarter of an inch in thickness. If your plants are large the hoops should be nearly twenty to twenty-three inches in diameter but may be of lighter material than the legs. Barrel hoops or similar contrivances are an abomination, while those above mentioned are not seen at a distance.

WHERE one saves his own seeds and grows many annuals it is well to procure a number of plain glass bottles—three or four-ounce bottles will do—and a box of gum labels. When the seeds are cleaned, bottle and label plainly, putting the date of the year on also. Some seeds retain their vitality a number of years. You may wish to omit growing certain plants one year but desire them the next, and your bottles will keep them safe from mice or other destructive agencies.

A GOOD manurial water to be applied to pansies and many other plants when flowering is made by dissolving one-half ounce of sulphate of ammonia in three gallons of water; apply twice a week. A good plan is to take a small tin cup, weigh the half ounce and note how much it fills the cup, then attach a label to the handle on which write say: "One-third full of sulphate ammonia to three gallons water," then you are not apt to get mixed up and want to put three ounces of ammonia to a half gallon of water.

DO SOME THINKING now and put your conclusions on paper and it will help you very greatly in spring. Now that the holidays are past and the evenings are long and you have settled down to peace and quietness again, lay the plan of your garden on the table and study it; if by a little change here, the planting of a few trees or bushes there, or the removal of something somewhere else, you can enhance the beauty and interest of your garden, make a note of it now, and when spring time comes you can throw your strength into executing the plans you now have designed.

HIGH MOUNTAIN PLANTS.—Dr. Thorold in passing from Ladak to China passed through twenty degrees of longitude at an average elevation of 15,000 feet and found only about 100 species of flowering plants. Not a tree nor shrub of any kind was found. Most of the plants were small isolated tufts or patches 2 to 3 inches high, and consisted chiefly of butter cups, gentians, poppies, saxifrages,

wormwoods, primroses and grasses. At an elevation of 19,000 feet *Saussurea tridactyla*, a little composite covered with a dense coat of wooly hairs was picked up. No plant has yet been discovered at any higher altitude in the world.

FERTILIZE THE FLOWERS to make the cucumbers and tomatoes set fruit in winter, especially between the middle of November and the first of January. With a snip of the finger or a camel's hair brush, on a bright morning, one can easily fertilize the tomato flowers; in the case of the cucumbers, as the fertile and staminate flowers are different blossoms, the fertilizing can be done by using a hair brush as above, but I prefer to pluck some good fresh staminate flowers, tear off the corolla, and then insert the part left into the cleft of the fertile blossom leaving it there. Cucumber flowers treated in this way, if otherwise healthy, most always swell and perfect their cucumbers.

ONE OF THE essential practices of a successful gardener is the keeping of a diary, in which is noted every important transaction in the routine of his work. Every step relating to a plant should be noted: The time of starting the seed, of pricking off the plants, of shifting into larger pots, of transplanting into permanent quarters, and the distance apart so planted. Then during the summer notations should be made of success or failure, whether placed too far apart or too close. Whether put out too early and thus stunted by the chill air, or kept under glass too long and thus becoming "leggy." When the following year comes and the same process is gone through he can profit by his errors. Note the time of covering and uncovering of plants; and constantly refer to last year's diary, and read a few days ahead in it, which will keep him posted as to what work it is about time to think of. It is the proper attention to the little things of this life that makes one successful.

BOSTON now claims Mr. J. A. Pettigrew, he having been appointed superintendent of the parks of that city and has accepted the appointment. Since the acceptance became known the officials at Brooklyn have been making a strong effort to retain him there, but Boston refuses to release him. The offer from Boston came at a time when a change of park commissioners was imminent at Brooklyn and the acceptance was sent through fear that political influences would prevail in the Brooklyn park system. Happily the change did not so result but the Boston appointment had been already accepted before this was known. It is good to see this competition among cities for the services of a man like Mr. Pettigrew, whose abilities are of the highest class. He did most excellent work for many years at Lincoln Park, Chicago, until the injection of "practical politics" into the park administration, whereupon he accepted a call to Milwaukee, and thence to Brooklyn, N. Y., from which place he goes to Boston.

The Greenhouse.

PREPARING FOR EASTER.

Easter Sunday this year is April 18. Bear this in mind and plan to have your display of flowers come in at that time. While it will be easy enough to manage your lilies and hydrangeas, you are going

to have more trouble in retarding your plants than in hurrying them into flower. Keep the azaleas and genistas as cool as possible without letting them freeze. If the marguerites are getting pot-bound, repot them so as to encourage more growth and a longer life, the same with callas. Cannas potted now should bloom at Easter. Late cinerarias if kept cool and repotted can be delayed till Easter, but the early and main crop will be pretty well over by that time. Cyclamen and Chinese primroses too will be mostly past, but polyanthuses and all hardy primroses if lifted early and potted can be had in bloom then, and a nice variety they make. Many begonias, especially *rubra*, *odorata*, and the like, may be had in full bloom. Leave lily of the valley outside till three weeks before Easter, then bring it into warm quarters, and it will have both good foliage and flowers. Sow Machet mignonette now and grow it on in pots, or plant it out on a bench in the greenhouse and it will make fine early heads.

It is hard to keep freesias back so long, better let them bloom earlier. Dutch hyacinths won't need any forcing at all, in fact we shall have to watch them strictly that they don't come in too soon, it is easy enough to hurry them up a little at that time of year, but a hard matter to retard them if they get the least start too soon. The same with tulips. Narcissus are more difficult to handle, several of them, notably the trumpet sorts, will be in bloom out of doors at that time or before it, so that it will take considerable tact to get the potted plants to come into flower later than the outdoor ones. Keep them cool all winter and towards spring have them in north-facing, sunless cold-frames.

Calceolarias grown along in the usual way should be in good bloom at Easter. By starting gloxinias in a warm house in January or early February we can have them in nice flower in April. Scarlet geraniums potted and given room enough to make stocky growth should be full of flowers after March. Show pelargoniums, potted now and grown on as we would calceolarias may be had in bloom in April but as a rule we prefer to have them and fuchsias come into flower after the rush of Easter is past.

Besides these "regular" plants we can have amaryllis, ixias, crown anemones, Bride gladioli, and a good many odds and ends of plants. And much can be done with early blooming hardy perennials; we have lots of these potted and now at rest in cold quarters preparatory to starting for Easter, but if you have not got any up you can wait till March and then dig up a lot, pot them, and start them into growth. It is wonderful how kindly these plants, after a long winter's rest, respond to warmth in spring. Among them are polyanthuses, auriculas, spring adonis, golden alyssum, moss pink, white arabis, trilliums, Canterbury bells, foxgloves, forget-me-nots, columbines, feverfew, red heuchera, daisies, lenten hellebores, and the like.

Hardy shrubs also play a prominent part among Easter flowers. Most any early blooming kind will answer. We have potted up a lot of *Spiræa bumalda*, *S. cantoniensis*, *S. Van Houttei*, and *S. Thunbergii*, weigelas, Japan hoteia, hardy genista, forsythias, lilacs, xanthoceras, mollis azaleas, *Hypericum Moserianum*, snowballs, deutzias, double flowering plums and cherries, etc. Nor are these enough, we can call lots of annuals to our aid. Emily Henderson or Blanche Ferry sweet peas sown in pots now

should bloom at Easter, and we can have sweet alyssum, calendula marigolds dwarf nasturtiums, ten week stocks, mimulus, Swan River daisy, *Coreopsis Drummondii*, collinsia, balsams, petunias, Drummond phlox, torenia, etc.

WILLIAM FALCONER.

PROPAGATION OF FIGUS ELASTICA.

Please give me full directions for propagating rubber plants. I have been told that if a leaf was taken off and planted it would grow. Is this so? E. J.

The propagation of rubber plants from a leaf is I believe impossible. And by cuttings in the usual way that the great majority of plants can be increased is a difficult operation unless you have every facility at hand which only the professional gardener can command, and then it is not often attempted because a much surer way exists.

If you have a good sized rubber plant which has some side shoots take a sharp knife and make an incision half way through the shoot and from eight to ten inches from end of shoot. Don't cut in straight or at right angles to the stem, but let the cut be slanting upwards and an inch or so below an eye or leaf. Insert a little sphagnum moss in the incision, wrap round and tie there a bunch of moss, which keep constantly moist.

In two months roots will be found on that part of the stem severed by the cut. When the young roots are from one-half to one inch long, cut the whole shoot off just below the incision and pot in good light soil and keep warm and moist. They will soon begin to grow and you will have a nice young plant. If you had the convenience to give the young plant a little bottom heat for the first month or two after being severed from the parent plant you would help it much in making a quick root growth.

WM. SCOTT.

CARE OF HYDRANGEAS.

Kindly tell me how to treat hydrangeas. Wish to know about pruning, soil, temperature, and what time they should be taken outdoors, etc.

Last year I had a number of hydrangeas which I wintered in the cellar. Early in spring I put them in the greenhouse where they grew very fast, the growth being tall and slender. Some bloomed and others did not. What flowers appeared were pale blue, and some of a greenish color. The plants were in good soil, enriched with old cow-manure.

The plants are now in the cellar, just as they were taken in last fall. How shall I treat them? C. S.

"C. S." has possibly made the mistake of keeping his hydrangeas in too warm a cellar. A cool, light cellar, or cool, light room where the temperature remained at about freezing would be the ideal place to winter them. If they are wanted for greenhouse decoration they can be brought into the greenhouse at end of February, and if brought slowly along will be in full flower in May and June, but if flowered in the greenhouse will not last long for veranda or lawn decoration.

A rather strong loam with one-fifth or sixth of animal manure suits the hydrangea. Small plants, or those that could be grown in seven or eight-inch pots need little pruning. Large plants in tubs can be pruned just sufficient to keep them in compact form. A large hydrangea plant for the veranda or lawn is a beautiful object and very satisfactory, lasting the

entire summer in attractive appearance, but for this purpose they should not be moved from their winter quarters till middle of April and then placed in some sheltered corner and allowed to come along with the advance of the season the same as our hardy flowering shrubs. Their showy blossoms will then last the entire season.

While resting leafless during the winter months very little water is needed, but they must not be allowed to get so dry that the wood shrivels, which in a very cool cellar is not likely to occur.

WILLIAM SCOTT.

PLANTS HURT BY FUMIGATION.

From Lenox, Mass., comes an inquiry from a subscriber for a list of plants that are seriously hurt by tobacco smoke, those that are not so badly injured and also those that are impervious to the smoke, and suggests a list of plants with some sign indicating their qualities in this respect.

This is unnecessary as there are but few plants grown either by the amateur or professional gardener that are much the worse for fumigating unless it is done with great carelessness. One of the greatest mistakes about the operation of burning tobacco to kill aphids on plants is that too many amateurs, and even commercial florists, put off the disagreeable job of fumigating till they see fully developed greenfly creeping round their plants and then they "smoke" heavy as they would call it. If smoking is faithfully done once every week, and that but lightly, no aphids will trouble your plants. It may be worthy of mention here what I believe is a fact, viz., that plants as well as animals can be gradually accustomed to the fumes of tobacco, and what would at first trial make a man very ill at ease and cause great distress, could after a few "applications" be endured with indifference. I am certain that in my own experience the plants most easily injured by the fumes of tobacco have after a few smokings been entirely uninjured by fumigation.

Of all plants that are burned by tobacco smoke the heliotrope is best known. Maidenhair fern (*Adiantum cuneatum*) and all the adiantums are easily burnt by the smoke. The young growths of *Astilbe Japonica* are very liable to suffer. One of the greatest gardeners of England, Mr. Baines, used to write in the *Gardeners' Chronicle* frequently to be sure and cover your azaleas when fumigating, and he may have been right, but I never found it so and have long since ceased to either cover them or syringe them when fumigating.

There is a question whether all plants are not more or less hurt by this process of burning tobacco and if some show most plainly that they are hurt, have not many others suffered more or less; have they not been stunted and their vigor retarded for a week or two. It is not the nicotine that prevades the atmosphere when burning tobacco that is deleterious; it is the hot smoke. There are a few rose growers left that still say that fumigation is not injurious to roses. The great majority say different. The young petals of the buds are injured and the flower comes twisted and imperfect.

To classify under different heads the plants that were more or less injured by smoke would be of little use, unless those plants in each class wanted the same temperatures and that would be impossible. Smoke mildly and frequently and little harm will come, but burning tobacco is not the most approved method of destroy-

ing aphids and other insects that nicotine will kill. In rose houses smoking is almost entirely abandoned, and evaporation in some form or other is now in general use. In a small establishment or the amateur's greenhouse this is infinitely better than fumigating. Get an extract of tobacco. The Louisville "rose leaf extract" is I think the best. Get a common tin dish, say 12 inches long, 6 inches wide and 3 inches deep, put in 2 inches of the extract diluted to 1 in 6—that is one part of the extract to six of water; into that drop a piece of red hot iron (I use a piece of old railroad iron) an inch or so smaller in length and breadth than the tin dish. The liquid will be evaporated, or always part of it, in a few seconds. It will effectually kill your plant enemies and will not hurt your most tender plants, and what is of great value will leave no objectionable odor.

Try this. The whole apparatus would cost you fifty cents and you will not complain of burnt plants or fill your clothes with tobacco fumes.

WILLIAM SCOTT.

ANNUALS FOR DECORATION DAY.

What seeds may I sow now for plants to be in full bloom the last week in May, so I may have the flowers for Decoration Day?

N. E. B.

There are not many seeds to be sown now that it would be well to grow for their flowers for Decoration Day. Sweet peas if sown now on your benches at the pillars of your carnation beds would be in full flower at that time. Pansies would also be in flower, but you would most likely have plenty of them in frames at that time and they are not of great value as cut flowers. Gladiolus can be planted on the benches of carnations and should flower about that time. Instead of taking up room with cheap and unprofitable crops, retard some of the useful things that there is a good demand for. Leave out in the cold a batch of *Spiraea Japonica* it can be brought into flower just when you want it. Keep a few hundred longiflorum lilies in your coldest house or cold pit that is not much exposed to frost. Nothing is more acceptable at that time. A few years ago I put 3,000 Von Sion narcissus into a neighbor's ice house. They were taken there about the last week in March and had not made a growth of more than two inches above the soil in the flats. It was not cold enough in the ice house to entirely suspend growth, and they only needed one week in a frame covered with glass to have them in full bloom. It was a great success and nothing ever paid better for the trouble. Hyacinths, narcissus and tulips could all be treated so, but put them in the ice house before they have felt the warm spring days.

WILLIAM SCOTT.

Miscellaneous.

THE GARDEN THAT I LOVE.

It is seldom that any book appears on matters pertaining to gardening in any of its forms that is so charming in its composition, so enticing in its details, and where one is so soon placed upon intimate terms with the author and his subject, as in Alfred Austin's production entitled "The Garden That I Love."

The English Poet Laureate is extremely

happy in his expressions and as some of the readers of GARDENING may not have seen the book a few quotations may be acceptable.

"For gardening is a partnership in which nature, the senior partner, exercises the principal authority. It is only fair that she should, for hers is the main portion of the capital, and she admits you into the business only because, while a clerk in her service, you displayed a certain amount of skill and a good deal of assiduity."

"Autumn, I grant, knows the art of gardening to perfection, possessing the secret of careless grace even beyond the spring. There is an orderly negligence, a well-thought-out untidiness about autumnal forms and colors no other season can match. Even to the garden proper, the cultivated plots of man, autumn adds such wonderful touches of happy accident that, when it comes, really comes, a wise man leaves his garden alone and allows it to fade and pass away, without any effort to hinder or conceal the decay. Indeed, it would be worth while having a cultivated garden if only to see what autumn does with it."

"The moment I enter a garden I know at once whether it is the owner's garden or the gardener's garden. Nearly all large and costly gardens are gardener's gardens, and for my part I would not take them as a gift. . . . I continually see cottage gardens, little village or secluded plots, cultivated and made beautiful by the pathetic expedients of the poor, which seem to have a charm that mine cannot rival."

"A garden that one makes one's self becomes associated with one's personal history and that of one's friends, interwoven with one's tastes, preferences, and character, and constitutes a sort of unwritten, but withal manifest autobiography. Show me your garden, provided it be your own, and I will tell you what you are like."

"Over and above fostering equanimity, the cultivation of a garden promotes the tender graces and extends the sweet charities of life. I need no introduction to a person who has a garden; and be his or her rank what it may, in I go, opening the gate, whether a huge iron or a humble wicket, with a proud confidence, certain to find a man and a brother, or a woman and a sister. Love of gardening creates a safe freemasonry among those who cherish it. . . . I beg, borrow, and, I verily believe, if need were, would steal, a cutting of any beautiful plant that was a novelty. But petty larceny is unnecessary; for we who have gardens that we love willingly give of our superfluity. . . . A flower border thus becomes a living record and diary of your wanderings, your visits, your friendships, a perpetual reminiscence of the generosity of the rich, and the graciousness of the poor."

OLD TIME GARDENS.

While enjoying writings upon modern gardens it is well also to take a peep into a little book entitled *The Garden*, published by G. P. Putnam's Sons, where the two Plinys give us descriptions of their gardens, and where Lord Bacon so charmingly writes that "God Almighty first planted a garden. And indeed it is the purest of human pleasures; it is the greatest refreshment to the spirits of man;

without which buildings and palaces are but gross handy works; and a man shall ever see, that, when ages grow to civility and elegance, men come to build stately, sooner than to garden finely; as if gardening were the greater perfection."

Where Sir William Temple mentions the curious custom among the Greeks and Romans of pouring wine upon the roots of the plane tree as "they believed this tree loved that liquor, as well as those that used to drink under its shade, which was a great humor and custom, and perhaps gave rise to the other, by observing the growth of the tree, or largeness of its leaves, where much wine was spilt, and thrown upon the roots."

Joseph Addison in 1712 writes: "Our British gardeners, on the contrary, instead of humoring nature, love to deviate from it as much as possible. Our trees rise in cones, globes and pyramids. We see the marks of the scissors upon every plant and bush. I do not know whether I am singular in my opinion, but for my own part, I would rather look upon a tree in all its luxuriance and diffusion of boughs and branches, than when it is thus cut and trimmed into a mathematical figure."

In another letter he closes with these lines: "You must know, sir, that I look upon the pleasure which we take in a garden as one of the most innocent delights in human life. A garden was the habitation of our first parents before the fall. It is naturally apt to fill the mind with calmness and tranquility, and to lay all its turbulent passions at rest. It gives us a great insight into the contrivance and wisdom of Providence, and suggests innumerable subjects for meditation. I cannot but think the very complacency and satisfaction which a man takes in these works of nature to be a laudable, if not a virtuous habit of mind."

The allusion of Addison to the prevalence of clipped and formal treatment of trees and shrubs in his time is further commented upon by Alexander Pope. It must be remembered that in the earlier part of the seventeenth century no garden was complete unless it contained plants, trained into fantastic shapes in imitation of men, living animals and mythological Deities. These were grown and trained into shape and then sold to owners of gardens. Pope after stating "that those who are most capable of art, are always most fond of nature," writes: "On the contrary, people of the common level of understanding are principally delighted with little niceties and fantastical operations of art, and constantly think that finest which is least natural. A citizen is no sooner proprietor of a couple of yews than he entertains thoughts of erecting them into giants, like those of Guild hall. For the benefit of all my loving countrymen of this taste, I shall here publish a catalogue of greens to be disposed of by an eminent town gardener who lately applied to me upon this head. He represents that, for the advancement of a politer sort of ornament in the villas and gardens adjacent to this great city, and in order to distinguish those places from the mere barbarous countries of gross nature, the world stands much in need of a virtuoso gardener who has a turn to sculpture, and is thereby capable of improving upon the ancients of his profession in the imagery of evergreens. My correspondent is arrived to such perfection that he cuts family pieces of men, women or children. Any ladies that please may have their own effigies in myrtle, or their husbands in horn beam. He is a Puritan wag, and never fails when he

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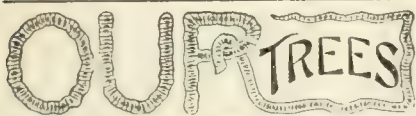
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shows his garden to repeat that passage in the Psalms 'Thy wife shall be as the fruitful vine, and thy children as olive branches around thy table.' I shall proceed to his catalogue, and he sent it for my recommendation. 'Adam and Eve in yew; Adam a little shattered by the fall of the tree of knowledge in the great storm; Eve and the serpent very flourishing. The tower of Babel, not yet finished. St. George in box; his arms scarce long enough, but will be in condition to stick the dragon by next April. A green dragon of the same, with a tail of ground-ivy for the present. N.B. These two not to be sold separately. Edward the Black Prince in cypress. A laurestine bear in blossom, with a Juniper hunter in berries. A pair of giants, stunted, to be sold cheap. A Queen Elizabeth in phyllyraea, a little inclining to the green-sickness, but full of growth. An old maid of honor in wormwood. A topping Ben Johnson in laurel. Divers eminent modern poets in bays, somewhat blighted, to be disposed of, a penny worth. A quickset hog, shot up into a porcupine, by its being forgot a week in rainy weather. Noah's ark in holly, standing on the mount; the ribs a little damaged for want of water.'"

It is hard to tell at this late day whether this satire on the clipped monstrosities of the time was the production of the "Puritan Wag" or the author of the *Essay on Man*.

Lady Mary Wortley Montague, Thomas Whately, Oliver Goldsmith and Horace Walpole, also contribute to this interesting work.

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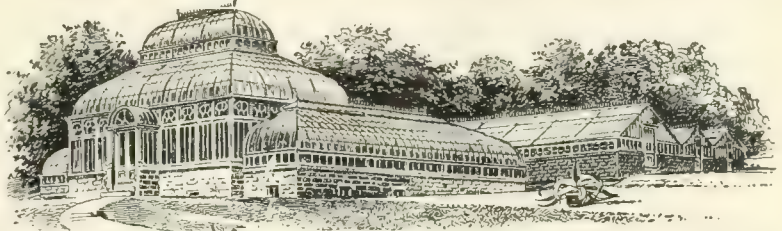
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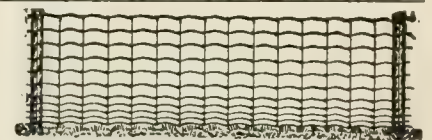
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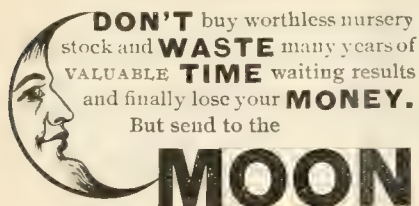
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CHICAGO, FEBRUARY 1, 1897.

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No. 106.



A NEW WATER LILY. (*Nymphaea Greya*.)

Aquatics.

NYMPHAEA GREYAE.

This is a beautiful hybrid nymphæa, a cross between *N. scutifolia maculata gigantea* and *N. gracilis*, the latter being the seed-bearing parent. It is described as follows: leaves large, twelve to fifteen inches in diameter, dentate, in young state sparsely spotted with crimson underneath; the upper surface of mature leaves bronze green. The flowers, which are borne on stout stems fifteen to eighteen inches above the water, have bright rose-pink petals; the stamens are of the same shade, tipped with purple. The

inside of the sepals is the same as the petals, while the outside is a bright green, with a few elongated crimson marks.

The flowers were exhibited before the Mass. Horticultural Society, receiving a first-class certificate of merit. It is certainly a grand acquisition, being one of most vigorous of all the nymphæas, and the flowers of a unique shade, which is retained in nearly full brightness until they fade, or for about five days. Under trial it has proved to be the freest of its class for outdoor cultivation. From its parentage it should prove half-hardy in this section (Massachusetts), and a little further south it should stand as well as *N. scutifolia*, which it resembles in habit. It is believed to be the first hybrid nymphæa raised in America. S.

Roses.

THE CHEROKEE ROSE.

In a recent number of GARDENING, L. Greenlee, writing from North Carolina, gives great and deserved praise to the Cherokee Rose. I may add to what he says that it is an evergreen, and in many parts of the south it is a favorite for hedging.

In reply to his inquiry why it is not as great a favorite in the north as the *setigera* and *Wichuraiana*, I will say that it is because of its lack of hardiness. On two occasions it has been under my observation, and both times the plants

failed to winter well. It may have been that had the plants been obtained from a more northern point than Florida, which is where they came from, the result would have been different, for I am a believer in the doctrine of plants becoming acclimatized. At any rate, as this rose is a native of China, and nearly all plants from that country live out in Philadelphia, I propose to make another trial of this, the *Rosa sinica*, or Cherokee rose.

In the summer of 1895, when visiting the Royal Gardens, Kew, England, I was

de Dijon and from the first of March it made a growth of four feet and is still growing. This ought to make an excellent companion for the Crimson Rambler. Chambersburg, Pa. BEYER BROS.

NEW ROSE SOUVENIR DU PRESIDENT GARNOT.

The accompanying engraving gives a fair idea of the form of this new hybrid tea rose but can give no conception of its beautiful color, an exquisite shade of shell pink.



A CLIMBING MOSS ROSE.

enraptured with the beautiful climbing *Rosa moschata*, which was then, July 2nd, displaying its large yellowish white flowers, in clusters, in great profusion. The flowers were, many of them two inches in diameter. It seemed to be of most vigorous growth. Now this would be a glorious rose for the south, and perhaps for this state, as it is a native of Southern Europe, and many plants from there live out with us. Have any readers of GARDENING had experience with this rose?

Philadelphia.

JOSEPH MEEHAN.

A CLIMBING MOSS ROSE.

This rose is a sport from Princess Adelaide, having the same foliage and color of flowers, except that the flowers are a little larger. It sported two years ago, making a growth of ten feet the first season, but would have made more had the top not been accidentally broken off. This branch bore one hundred and eighteen buds and flowers the following spring, making a mass of flowers.

The plant is now about fourteen feet high, well branched and was full of flowers when photographed last June. The white spot on the rose, about four boards high, is where the sport started, with the old bush or parent plant to the right, or side of the porch. It has held its new form, as we have budded it on to a Gloire

It was raised by M Pernet-Ducher, the French rosarian and is a seedling from Lady Mary Fitzwilliam and an unnamed variety. It promises to be very largely grown by florists for cut flowers and will undoubtedly be equally useful in the garden.

Trees and Shrubs.

EXPERIENCE WITH SHRUBS.

There are a few things that vex an amateur in gardening very much, and one is the selection of shrubs and trees that will endure the climate of certain sections.

One reads the catalogue descriptions, is captivated, hastens to secure the plants, and though he be careful in planting finds that fully one-third of his choicest selections are not hardy enough to endure the winter, or die the following summer.

The first impulse is to call the nurseryman bad names and resolve you will never patronize him again. But after a few years' experience it gradually dawns upon one that the planter's judgment has been at fault on one of four points at least, namely soil required, particular location, protection until root action sets in, or worst of all being afraid to use the pruning knife when planting.

An amateur desires to grow a bush quickly and dislikes to prune, not thinking that the top is out of proportion to the roots and that the shrubs may have been ten days in transportation and during that time without nourishment.

Another reason for failure is found in an innate desire to display our finest specimens in a conspicuous part of the border or lawn. This is not always wise, especially if one's residence faces north or west. This fact was brought to my notice very clearly by reason of successive failures to grow the Japan Judas (*Cercis Japonica*) on the north side of my house having a full western sweep. I moved one miserable specimen to a sheltered location and afterwards a more magnificent looking bush would be hard to find.

The old desire to let the passer-by admire its beauty took possession of me and I moved it to the front again this fall and have surrounded it on two sides with a windbreak of cornfodder and brush. It having a mass of fibrous roots over two feet square with soil adhering to them, I shall pass the winter with a measure of hope.

With me *Forsythia Fortunei*, *Rhus cotinus*, *Mahonias aquifolia* and *Japonica*, andromedas, rhododendrons, deutzias, *Viburnum lantana*, *Cornus sanguinea*, red-flowered dogwood, tulip trees, European mountain ash, paw paws, have either died in winter, or like the rhus, blighted in summer. Under same conditions spiræas, berberis, Paul's thorn, euonymus in variety, tamarix, ginkgos, sumachs, lilacs, iteas, *Prunus Pissardi*, California privets, purple filberts, *Viburnum rugosum*, *Cornus circinata* and *florida*, *Hydrangea paniculata*, paulownias, hypericums, philadelphus, have flourished.

There are four shrubs every small garden should have, namely *Prunus Pissardi*, *Tamarix chinensis*, Van Houtte's spiræa and *Ligustrum ovalifolium*. They can be depended upon in any situation and there is a wealth of beauty in their forms and colors.

Am interested in lilacs, have a number of new varieties. Some of them send up numerous sprouts; shall I keep them cut and grow to single stem? They are planted in groups five feet apart.

Shall I cut *Clematis paniculata*, *C. virginiana*, and Hall's honeysuckle on verandah to ground? If so when?

Have failed so far to grow paw paws. Can they be raised on uplands?

Frankfort Springs, Pa. O. G. BRYTE.

Mr Bryte's experience is certainly an interesting one, inasmuch as in the list given as not standing his climate is a tree whose habitat extends much farther north, and among those given as having flourished is one not considered reliably hardy in its young state much farther north than Washington, D. C. The tulip tree (*Liriodendron tulipifera*) is found native as far north as Vermont and Michigan, but reaches its finest development in the valley of the lower Wabash River and along the western slopes of the Allegheny Mountains. In my grounds at Highland Park, Ills., in an exposed situation it has never lost a tip, while the paulownia mentioned as hardy always freezes to the ground unless well wrapped in winter.

Deutzias also freeze back with me unless protected, but I find that the Pride of Rochester is the hardiest. Both the rhododendron and andromeda (*Oxydendrum arboreum*) require a peaty soil and may require winter protection in his section,



NEW ROSE SOUVENIR DU PRESIDENT CARNOT.

but the balance mentioned should prove hardy. The red-flowering dogwood lived with me, but did not flower. The white form is not indigenous to our woods. If they are, near Frankfort Springs the red variety should succeed. The purple-leaved filbert winter kills with me, as does the California privet. *Rhus cotinus* will sometimes blight in summer if grown in too rich a soil. Try a well drained gravelly soil.

The tulip tree should always be planted in the spring and only young trees three to four feet high selected, and these should be well cut in. If you have done your planting in the fall, try spring planting, and if much exposed to bleak winter winds wrap up the trunks for one or two winters or place wind breaks around them.

Lilacs.—Examine the sprouts. Many of the newer lilacs are worked on privet stock; if yours are, cut them out. Many prefer to grow lilacs in bushy tree forms; they are easier kept within bounds by pruning immediately after blooming and are kept to a low head. If you grow to a single stem and convert the entire ground space occupied by the group into one cultivated bed, you can hide the bare ground by planting *Hypericum aureum* or *Berberis Thunbergii* in between the lilacs. You can also cover with *Vinca minor* or *Euonymus radicans*, either the green or variegated form.

Clematis.—Cut them back to within one foot of the ground next spring (could have been done last fall). There is no object in saving the old wood, as the varieties you mention bloom on the new wood.

Hall's honeysuckle.—Cutting this back is a matter of condition and taste. If Jack Frost don't do it for you, and it

does not climb too high or become bare at the bottom, leave it alone. You can cut it back if desired. It blooms on the new wood.

Pawpaw.—Presume you mean the tree form, *Asimina triloba*, sometimes called the custard apple. This is indigenous to western New York but more abundant westward to Iowa and southward to Florida. The late Mr. A. S. Fuller grew it on his grounds, which might be considered an upland position. *A. parviflora*, the small-flowered pawpaw of the south, is a shrub found only in dry soils.

W. C. E.

INSECTS DESTROYING OUR ORNAMENTAL AND SHADE TREES.

BY JAMES JENSEN, SUPT. HUMBOLDT PARK, CHICAGO.

[Read before the Horticultural Society of Chicago, January 9.]

The injury done through the agency of insects to our ornamental and shade trees has taken such proportions that the greatest precautions should be exercised to stop the depredations of these pests.

During the droughts of '93, '94 and '95, trees that did not receive artificial watering suffered to such an extent that in their weak condition they fell an easy prey to the destructive insects, and the year just at a close by no means records a diminution of the pests.

The insects that will be treated in this paper can be divided into three classes, viz.: Scale insects, leaf feeders and borers.

Of scale insects, the one most common and well known is the cottony maple scale (*Pulvinaria innumerabilis*, Rathvon). This scale has proved itself very troublesome to maples, especially *Acer dasycarpum* and its varieties, also to the box elder or ash-leaved maple (*Negundo*

aceroides), but still more so on *Crataegus coccinea*. This insect first settles on the leaves, and later migrates to the twigs, where it is easily noticed by the waxy or cottony egg-masses. The proper time to fight it is in its early stages, and this can be done by spraying with kerosene emulsion. All our scarlet-fruited thorns (*Crataegus coccinea*) were infested with it this summer. We used two sprayings of Paris-green at intervals of four to five days with good effect.

The oyster-shell bark louse (*Mytilaspis pomorum*, Bouche) infests maple, linden and elm, usually on the smaller limbs and branches, but also on heavier wood. Trees attacked by this scale show a crippled appearance and drop their foliage early. A wash consisting of whale-oil soap (2 pounds to 1 gallon of water) soon after the leaves fall in autumn (and if not effective another before the buds open in spring) will greatly diminish the pest. Another method is spraying with kerosene emulsion about the first of June, when the louse is in its young state.

Leaf feeders.—Though not very troublesome to our ornamental trees in this latitude so far, a few remarks might not be out of place. The caterpillar of the tussock moth, (*Orygia leucostigma*, Smith and Abbot) seems to be more abundant in the city than on the outskirts, and is usually found on the ash-leaved maple (*Acer Negundo*, *Negundo aceroides*) and *Acer dasycarpum*, with varieties. U. S. Entomologist L. O. Howard gives an account of this insect in the Report of U. S. Dept. of Agriculture for 1895, and also relates here the girdling of twigs on the American elm in Albany, to such an extent that the sidewalks were covered with broken off leaves. This same occurrence was reported to me last summer from Mt. Olivet Cemetery, but the trees attacked here were maples.

The willow tussock moths (*Orygia definita*, Packard) have shown themselves so numerous the last two seasons on *Salix alba*, planted on streets in the vicinity of Humboldt Park, that they were totally defoliated; and to the great benefit of these thoroughfares, a number of them have been cut down, to give room for better and more appropriate shade trees.

The eggs of the *Orygia* are deposited on the bark, and are very easily detected on account of their white color. They remain on the trees during winter, and where not too numerous can be hand-picked, and afterwards destroyed by burning. A more rapid method is using a sponge fastened to a long pole, the sponge being saturated with creosote oil to which turpentine has been added, so as to keep it liquid in cold weather. This has been applied to the egg-masses with good results.

The fall web worm (*Hyphantria cunea*, Drury) might also be mentioned here, and is, as far as my observation goes, usually found on linden. Its large web, spun among the smaller twigs, and full of caterpillars, is very easily noticed during midsummer. They can be destroyed, either by cutting off the limb, or, what is still better, by applying a torch, consisting of a rag saturated with kerosene. If very numerous, use some arsenical spray.

During the summer of '95 some of our lindens were alive with an insect that Mr. N. Osborn, of the Iowa Agricultural College, called *Lachnus longistigmus*, and for which he recommended kerosene emulsion as a remedy. Fortunately it did not appear this year, and I have not been able to study it any further.

I shall also call attention to the elm-

leaf-beetle (*Galerucella luteola*, Mull) that is doing so much damage to the elm, and especially to varieties of the European species (*Ulmus campestris*) in the eastern states, but fortunately has not caused any alarm here so far.

How destructive these leaf-feeders may be, there have in most all instances been found remedies for keeping them in check. This is probably more than can be said of the larvæ of those insects commonly known as borers; and it appears as though this latter pest is more abundant in localities where the work of other insects is less destructive.

The syringa borer (*Podosesia syringæ*, Harris).—Its specific name indicates connection with the lilac, although here it is not on the lilac that this, probably the most voracious borer, is doing its deadly work, but on the white ash. I had opportunity to notice a young ash about 6 inches in diameter appearing robust and in good health the fore part of the summer, suddenly changing the color of its foliage from dark green to a sickly yellowish green, as is common with trees infested with the borer. The next day it looked still worse, and upon examination I found the borer at work. It was left alone for a few days more, and now the leaves were completely withered. The saw and a sharp ax told the rest of the story. The moth flies in the beginning of May and lays its eggs in crevices of the bark. The egg state lasts about a week. The larva as soon as hatched bores its way into the middle of the tree, turning its course upward. After transformation the pupa remains in the tree all winter. Where trees are attacked in large quantities, there seems to be but one remedy: Cut them down, and burn them, and surely the only time for extermination is in the egg state.

Prionoxystus robinia (Peck).—This borer is probably just as destructive to poplars as the first named is to ashes; it furthermore infests oak and black ash. The moth lays its eggs in cracks of the bark in the middle of July. After hatching, the larva bores into the tree, forming large holes and galleries in the trunk. Here it remains from 2 to 3 years in the larva and pupa state before maturing into the moth. The balsam poplar seems to be its favorite, it having destroyed almost every tree of this species in the park. The burrows of this borer are easily detected by the cast chrysalis skins projecting from the outlets. As a remedy Fitch recommends soft soap to be applied to the trees in the fore part of June, but how effective this is I have not been able to ascertain.

The poplar ægeria (*Ægeria tricineta*, Harris) bores in branches, suckers and small trunks, and makes here its home for at least one year. The moth flies in June and July, and, it is supposed, lays its eggs in the burrows of the beetle *Saperda maesta*. Some 2 inch stock of *Populus suaveolens* were attacked by this borer during August and totally destroyed; other varieties of poplars, standing in the same row, were less severely injured.

The locust borer (*Cylenæ robinia*, Forster).—Not one of our common locusts (*Robinia Pseudacacia*) has been able to withstand the murderous work of this beetle, and we must be satisfied with the bushy growth that soon appears, after the trunk has been destroyed. The eggs of the locust borer are laid in early September in crevices of the bark. The larva soon after its birth works its way under the bark and deep into the wood. After transformation from the pupa, a dark

brown beetle, striped and banded with golden yellow, emerges from the holes in early September. It is thus found creeping over trunks, limbs and foliage by the hundreds. At this time it can also be found on the golden rods, the pollen of which seems to be a favorite food for the full grown insects.

Tremex Columba, a wasp, has been found on ash, crab apples, and maples, and especially on the silver maple (*Acer dasycarpum*). The female bores numerous holes into the tree, in which she lays her eggs with her long ovipositor. She can be found at work in May, and again in August, on the trunk a few feet from the ground.

The linden borer (*Saperda vestita*, Say) bores in the trunk, undermining the bark in galleries or penetrating the solid wood. The beetles begin to come out in May, and continue to make their way through the bark of the trunk and the larger branches during the whole summer. They immediately fly into the top of the tree, and there feed upon the epidermis of the twigs and the petioles of the leaves. They deposit their eggs upon the trunk or branches, making slight incisions for their reception. To the borers that especially attack maples, could yet be added *Sesia acerni* (Clem.). It belongs to the clear-winged sphinges or hawk-moths.

I might continue naming borers for almost every tree. The birch is fast disappearing under their destruction. The apple-tree borer (*Saperda brevittata*) has destroyed every mountain ash, beautiful as they are. *Cornus paniculata* has for the last few years, here and there, suddenly shown whole branches withered, and upon close examination the borer was found. Specimens sent to Washington proved it to be a species of the wasp-like moths, an *ægeriid* allied to the crown-borer of the peach.

As a rule insect attacks on shrubs are not so alarming, as the pests can here be fought easier than on tall branching trees.

The borers are undoubtedly extremely difficult to fight, and outside of a wash in the egg-laying season, and plugging the holes with wood to prevent water from settling in the tree and thus starting rot, there is, as far as my experience goes, very little to be done. Trees badly infested should be cut down and burned at the time we know the larvæ are at work, or during the pupa period. Where the number of trees attacked by the borer is confined to a few specimens and the same are not extremely large, the following method can be tried: A fine wire netting is placed around the trunk of the tree, where it shows holes of the borer, leaving about an inch space all around, and with both ends closed. The moth will thus find itself a prisoner, when trying to leave the tree, and thereby be prevented from depositing her eggs on other trees. Prompt killing of the moth and plugging up the holes might save the tree.

Vigorous and healthy trees are rarely attacked by borers, which is plainly shown to us in our primeval forests. And where do we find them? Not on our cold wet prairies, where the blue clay almost penetrates the surface. No, but along river bottoms, where moisture is plenty at all times but with drain sufficient to prevent the soil from souring; and here the ash, elm, linden, soft maple and others are at home. Or on the slightly raised prairie, where gravelly clay or sandy bottom prevails, and provides for ample drainage. There the oaks, hard maple and others flourish. Nature is here, as in everything else, always the best teacher.

More care should be exercised in selecting trees for planting, using only such trees as the natural conditions encourage, and thus most certainly a great gain would be had in the right direction.

It is well known that the beautiful birches and oaks along the north shore of Lake Michigan are fast disappearing. Did we ever hear any complaints in that direction before sewerage had taken away every drop of moisture? How much moisture can we give trees along our boulevards, where all the surface water is drained into the sewer, and how can we expect to find healthy trees on these thoroughfares, and especially in the city, where the pavement is asphaltum, and where poisonous gases assist in the work of destruction? Certainly the most robust trees should be planted here, if any. In planting trees, we should always look to their natural wants, and thus, and only thus, shall we be able to grow healthy specimens.

ORNAMENTAL BIRCHES.

There are but few families of plants affording more useful species and varieties to the planter than the birch. Nearly all the species in general cultivation in our country are native ones, and very beautiful they are. But when it comes to varieties nearly all we find in cultivation belong to *Betula alba*, the European white. This one, *alba*, and its varieties, and two native species, *populifolia* and *papyracea*, known as poplar and paper birch respectively, comprise the white birch group.

Taking the two native sorts first, while both are used to a great extent for their color, the paper birch is by far the best. Not only is its bark as white as white can be, but it forms a tree of beautiful proportion. Its leaves are quite large for a birch. Its many good qualities fit it admirably for a shade tree. In some situations, where its white bark would be in keeping with its surroundings, it would prove an excellent tree for an avenue. It does not take on its white colored bark quite as soon as the poplar and the English does. In the winter season the beautiful white of the main branches and the almost black bark of the younger ones, form an attraction that calls forth the admiration of all that love beautiful trees.

Another lovely while barked tree is the cut leaved weeping, the well known variety of the English. It is one of the most graceful of trees. It is of upright growth and a less spreading tree than the one just described. Its slender, drooping twigs, finely divided leaves and lovely white bark, make it in universal demand. Both this and the paper birch are perhaps more interesting in winter than in summer. They are certainly to me as are many other deciduous trees.

Another very desirable variety of the English is *fastigiata*, an upright growing one, with branches oppressed almost as much as a Lombardy poplar. And of course the English itself will always keep its place as a desirable white barked tree. The red birch, *Betula rubra*, is the one common along the borders of creeks in many places. Along many of the streams in this state there are places where these trees embower them completely, the limbs from trees on both sides intermingling in mid-stream well above the water. The shaggy red bark, hanging from the trunk and limbs, seems well in keeping with the surroundings in such locations. And as a lawn tree, the landscape gardener finds a place for this species.

The sweet birch, also called cherry birch is *B. lenta*. It makes a massive tree, as



THE WHITE PLUME SPIRÆA (*Spiræa tomentosa alba*.)

seen here in its wild state, the trunk being 2 to 3 feet in diameter, bearing a large, spreading head. And most all boys know the sweet birch, the twigs affording them a dainty morsel in the spring.

In the yellow birch, *B. excelsa*, we have another large and vigorous growing tree, and it is fast growing as well. It is not as twiggy a grower as the last named, but perhaps exceeds it in height when full grown. The silvery yellow of its outer bark makes it a much admired tree.

As already suggested, these pretty barked trees afford a great deal of pleasure in the winter season and now is the time to judge of what they are like, and to decide on where one or more of them would be in place.

In regard to the time to plant birches, while with good care fall planting is usually a success, spring is the preferred season. They are not the easiest trees in the world to move, but when a good pruning goes with the transplanting, failure rarely comes. JOSEPH MEEHAN.

[The European birches, especially the cut-leaved weeping form, do not do well along the north shores of Lake Michigan, from Chicago up to above Milwaukee at least. As a rule they die at the tops after reaching a height of fifteen to twenty feet.—ED.]

"WHITE PLUME" SPIRÆA.

(*Spiræa tomentosa* var. *alba*).

This promises to become a very popular

shrub, both for decoration of the lawn and for producing cut flowers. Unlike the pink form of the species, the spikes are open and loose, making delicate plumes, while the flowers are a dainty white.

Being a low-growing shrub, and flowering most freely in the heat of mid summer, it is a welcome addition to the always too limited list of showy shrubs available at that season. For massing it is unusually attractive.

The picture shows only small spikes, cut at the end of the season, when the plants were nearly out of flower. The lasting qualities of the flowers was well illustrated by the fact that the sprays shown were left for nearly an hour in the hottest noon sunshine before being photographed.

WM. H. HARRISON.

Lebanon Springs, N. Y.

VITIS COIGNETIÆ.

In answer to the suggestion of M. A. in a recent issue of GARDENING that those who have had experience with *Vitis Coignetia* give their experience with it, I would say that it has been in the collection here for several years past, and so far, though there are plants of it in different situations, not a leaf on any one of them has ever taken on any bright color. When autumn comes, they change just as those on a Concord grape does, that is turn brown, and drop off.

Last summer when Mr. Veitch, of the

famous English nursery firm, was here he told me this vine colored splendidly in England. He was much surprised to find that the vines I showed him of it did not color. I learned from him that plants from his stock had been sent to this country, and perhaps those who have them would report on them. The plants here came through the Arnold Arboretum, and there is no question as to their genuineness.

JOSEPH MEEHAN.
Philadelphia.

The Flower Garden.

HARDY PLANTS FOR SHADY OR PARTLY SHADED POSITIONS.

Where any part of an herbaceous border is shaded by large trees planted near by, many of the plants will not succeed as well here as in the more open portion of the bed. This state of affairs should not discourage any one and there is no need of cutting down one or more fine trees in order to have the border plants do well, for we have a goodly number of hardy plants which really need just such a shady position to fully develop their beauty, and if the trees are not close enough to admit of their roots running into the border, where they would be likely to exhaust and impoverish the soil, I should consider it rather an advantage to have some shady places in the border for the accommodation of such species or varieties which would only thrive fairly well, or not at all, in the more exposed situations.

Adonis vernalis and *A. pyrenaica* seldom do well in a very sunny position. They are very pretty yellow-flowering plants with much divided and lacerated foliage. Neither of them grows higher than 12 inches or so. The former blooms in early spring, the latter in June or July; no special soil is required, but a too dry situation should be avoided.

Aster alpinus, is a low compact growing perennial not over 9 or 10 inches high, bearing a profusion of bright purplish-blue large-sized flowers, beginning to bloom about June 1st and lasting well into July; sometimes a second crop will appear in the fall but this can not be relied upon every year. Although this plant will usually do well when fully exposed to the sun, its flowers, when growing in partial shade increase in size and last much longer in perfection; its flowering season is also prolonged by being protected from the hot July sun.

Geum montanum and *G. coccineum* fl. pl. require shade; the foliage in the open will usually be burned and becomes unsightly before the summer is over. The first named has large yellow flowers and grows about one foot high; it blooms during the spring months. The second has attractive double red flowers, bright and shiny, freely produced on slender branchy stems 15 to 18 inches high and continues to bloom from June to the middle of August.

Lychnis tulgens and *L. Haageana* are very showy, but we have always had trouble to keep the plants in healthy condition until we decided to try them in the shade. The former bears large bright scarlet or vermilion flowers in spring and during the summer months. The latter has the same handsome shaped flowers ranging in color from white to deep scarlet. Both are compact growers and seldom grow over 10 inches high.

Globularia trichosantha will do admirably in shady places; sending up its numer-

ous blue globular flowerheads during June, July and August. Globularias are rather dwarf, compact growing plants and thrive in most any situation or soil, but are best adapted for shady nooks, height not above 10 inches.

Aquilegias of all descriptions succeed admirably under such conditions, though nearly all of them will also do in full exposure to the sun, but partial shade seems to suit them, even in close proximity to large trees or shrubs, and where the roots of these run into the border, they may be successfully introduced.

Delphinium nudicaule, *D. cashmerianum* and *D. Brunonianum*, which are not often seen in perfection, should be grown in partial shade where they are protected from the hot sun. They are not tall growers, from 12 to 18 inches is their usual height, and they are not at all difficult to manage under such conditions.

Arnebia echioides is a pretty little thing for shady positions; it has pale yellow flowers and blooms in May or June, growing about 10 inches high.

Dicentra eximia, although not requiring any shade, will grow more luxuriantly and its foliage will be longer and more perfect if protected from the sun. As it is nearly all summer in full bloom, and the foliage is very ornamental, the desirability of this plant for such places is plain enough.

Dodecatheon media and *D. integrifolia* really requires the shade of overhanging branches and absolutely will not do where fully exposed, especially in a rather dry situation; they like best a low and moist ground under lofty trees; their pretty, deep rosy flowers appear in the spring on the first named and in early summer on the other.

Thalictrum aquilegifolium grows luxuriantly and perfects its large racemes of white, lilac or purplish feathery and loose flowers much better here than where no protection from the sun can be afforded; it grows equally well in rather dry and in moist ground, but its height varies considerable in such cases. I have seen good old clumps in dry open borders only 2½ to 3 feet in height, while other plants of the same age in low and damp ground, protected from the sun, were over 6 feet high.

Campanulas, with very few exceptions, may safely be planted in shady places and though they may here grow a trifle taller, their delicate flowers will be produced with the same freedom as in the open border.

Lobelia cardinalis, *L. fulgens* and the large blue flowering *L. syphilitica* are sure to give best satisfaction under precisely such conditions, especially if the soil is inclined to retain the moisture.

Inula glandulosa is a good subject for a prominent place where a large yellow flower is wanted; it blooms in July and August and grows about 2 feet high; give it a rather dry soil. *Inula hirta*, another yellow free-blooming, compact-growing plant is well worth growing; it is 12 to 15 inches in height, with narrow foliage, and it stands a shady position equally well.

Waldsteinia fragarioides with strawberry-like foliage and flowers of a yellow color in spring, forms a dense mass of foliage and is very recommendable for the dryer portions under and near the trees. Hellebores are just the things for the shaded sections in the border and trilliums do better here than in the open spaces.

For deeper shaded places and where the branches overhanging the border are lower down, so as to interfere to some

extent with the free circulation of air, I can recommend but few plants with safety. Most all primulas will succeed fairly well here. Hepaticas in variety are excellent and do well in the dryer portions. The epimediums may not do quite as well in the densest shade, but their delicate bronzy colored foliage preserves its charming coloring better here, and usually they also flower some days longer than they would under other circumstances.

Ourisia coccinea likes to be in the shade all day, has well furnished spikes of very showy large scarlet flowers, and is about a foot high, but requires to be surrounded by stiff clay, and the roots have to be firmly and tightly imbedded into this material, pounding and packing the clay with a wooden mallet around the roots as hard as possible; select a moist place for it. The foliage is very ornamental, irregularly notched or cut along the outer edges. In most seasons it blooms nearly continuously all through summer.

The evergreen large leaved saxifragas, such as *S. cordifolia*, *S. crassifolia*, *S. purpurea* and *S. ligulata* may safely be planted in this position. Several of the spiræas, like *S. filipendula*, *S. astilboides* and *S. palmata* have no objection to densely shaded places, and *Anemone sylvestris* is one of the best and most accommodating plants, for it flowers under any circumstances, sun or shade does not seem to make any difference in the production of its pure white flowers. *Omphalodes verna* will also produce its pretty forget-me-not like flowers if not planted in the very darkest corners. *Mertensia virginica* and *M. siberica*, both with blue flowers in spring and not growing over a foot or so high, delight in the shade of the trees, but should only be employed where the ground is moist and light.

I could have made the list of shade loving plants much longer, but it is not my intention to give here a complete list of them. Those mentioned in the above are all, or nearly all, well-known everyday plants which are found in most all collections, and none of them require any special treatment aside from a shady position; in fact the majority of them will thrive as well in any ordinary well prepared border.

J. B. KELLER.

Rochester, N. Y.

LILIAM GIGANTEUM.

This choice and beautiful lily is the most majestic of lilies. It grows to a height of six to ten feet and has large heart-shaped leaves quite distinct from those of all other lilies. The flower stems are stout and erect and carry six to twelve long trumpet-shaped white flowers. This lily is not seen much in cultivation, as large flowering bulbs are quite expensive. It likes a half shady place to grow in and is quite hardy with us here with a light protection; but great care has to be taken in spring to protect against late frosts, as the young shoots are liable to be hurt; we use bell glasses for this purpose, putting them on at night and taking them off in the mornings. There is little use in getting small bulbs of this lily, as it will take them years to flower. Good flowering bulbs are of large size, 12 to 18 inches in circumference.

We flowered this lily last summer, but the flowers did not all open, as it takes it a year or two to get well established. It likes good soil to grow in, and a place should be prepared for it, using chopped sods, leaf soil and sand. If manure is added let it be in the bottom of the hole, which should be about three feet deep.

The bulbs should be planted about a foot deep, placed on a layer of clean sand and covered over with sand; this keeps the bulbs clean and away from any decayed material that may be in the soil.

This lily should be planted in a somewhat sheltered place, as windstorms damage the leaves and this greatly detracts from the beauty of the plant. It likes a well drained soil, but plenty of water should be given in its growing season. We always keep a mulching of manure on our lilies and find it of great benefit to them, as it retains the moisture and keeps the ground around the plants cool.

Mahwah, N. J.

DAVID FRASER.

PERENNIALS FROM SEED.

J. W. G. wants the names of a few good perennials which he can grow from seed. Seedlings of herbaceous plants, with few exceptions, will not bloom the first season and should be grown for a year in a frame or sheltered spot where they can be watered occasionally, so as to encourage a strong and healthy growth. The seed may be sown in boxes or in the frame, slightly shaded until the young plants are up, then as soon as large enough they should be transplanted far enough apart to allow them to spread, without crowding each other; just after transplanting a slight shading for a few days will greatly assist the establishment of the young seedlings and in the fall or following spring they are ready to be removed to their permanent places.

The care and attendance these plants require during the whole of a season involving a lot of tedious labor, is a matter which in many cases has been found rather unprofitable, because most of the plants are easily increased by division and then if any special varieties with peculiarities in flower or foliage are to be increased we are not sure by any means of finding a reasonable percentage among the young seedlings, which possess the characteristics of the parent plants, therefore under such circumstances it would seem best to rely only on division. By a very small investment in a dozen plants and planting these in well prepared soil for one season, dividing them in fall or spring, we can work up a stock of such varieties as we want for our gardens fast enough and with far less labor, being also sure of propagating the original type.

In all cases of double-flowering plants it would be impossible to tell the singles from the doubles until they were large enough to produce flowers. Yet quite a number of things may be grown successfully from seed, but J. W. G. does not mention any particular purpose he wants them for; if for border use, or cutting purposes, for the shrubbery or whether he intends to start in on a general collection, though I presume Mr. G. only cares to have a few desirable plants for a private garden and the following list may suit the climate of Los Angeles perfectly well. However he may experience some difficulty in procuring seed of all those mentioned, for as there is but a very limited demand for such seed, few of our seedsmen care to keep it in stock.

Agrostemma coronaria, *Agrostemma flos-Jovis*, *Alyssum saxatile compactum*, *Centranthus ruber*, *Delphinium formosum*, *D. hybridum* and *D. sinense*, *Helianthus rigidus*, *Helianthus buttaris*, *Helianthus latiflorus*, *Papaver nudicaule* in several colors, *Anthemis tinctoria*, *Aquilegia coerulea*, *A. chrysantha*, *A. canadensis*, primulas in variety for half shaded positions, auriculas, for similar places,



THE DOVE ORCHID. SEE PAGE 152]. (*Peristeria elata*.)

rudbeckias of various varieties, *Gaillardia grandiflora*, *Campanula carpathica*, blue and white, *C. glomerata*, *C. Van Houttei*, *C. persicifolia* in variety, *Linum arborum*, *L. perenne*, *Saponaria ocymoides*, *Heliopsis laevis*, *Coreopsis lanceolata*, *Scabiosa caucasica*, *Lobelia apolla*, for shady situations, *Heuchera sanguinea*, *Viola cornuta* for half shade, *Lychnis fulgens*, *L. Sieboldii*, *Centaurea montana alba* and *rosea*, *Pyrethrum roseum fl. pl.*, one half of which will prove single but perhaps equally desirable, *Eryngium* in variety, *Statice tartarica*, *S. latifolia*, *Stokesia cyana*, *Pratia angulata* (*Lobelia*), *Dictamnus fraxinella*.

The above list would give a fairly good flower show during the spring and summer months and a few fall blooming plants are included. J. B. K.

VARIOUS QUESTIONS FROM MINNESOTA. ANNUALS AND PERENNIALS.

What is the difference between annuals and hardy annuals, perennials and hardy perennials, biennials and hardy biennials?

Annuals are plants whose natural duration of life is limited to one year. The hardy ones are those that may be planted outdoors where they are to bloom, while the tender ones require the aid of the greenhouse or hotbed to start and nurse them into form for planting out. Annuals always bloom the same year they are sown.

Perennials are plants whose natural

period of life extends over an indefinite number of years. Some may be raised from seed sown outdoors, while others are more easily started under glass. Hardy ones are those that will live through the rigors of winter. The term "hardy" has only a local signification. What might be hardy in Louisiana might not be so in Minnesota. Some perennials bloom the first year, while others not until the second. Tender perennials are those not able to stand the winter. Some that bloom the first year are often treated as annuals.

Biennials are those that bloom the second year and then generally die: Where they will stand over the first winter they are termed hardy. Conditions occasionally cause biennials to bloom the first year or again the third season.

HARDY ROSES, ETC.

Last fall I made a bed to be planted with hardy roses next spring. It is against the southeast side of the house, 24 feet long by 2½ feet wide; ground slopes gently away. It is raised nearly a foot, and outer edge sodded up. It was spaded deep, and the bed composed of about one part of old cow manure, one part clay and about three parts black mellow loam. Is it made right or is it too narrow or raised too high? I want this bed to be a crackerjack of roses or other hardy good things. Position conspicuous. Kindly give about the right number and names of most desirable kinds for such a bed.

Don't like the position for a rose bed. Roses like an open situation, yet somewhat sheltered from the winds. The bed should not be raised, as it naturally is in a very dry situation owing to the ground sloping from it, and especially if there is a cellar wall to drain it still more. Lower it and grow a double row of cannas, planting the rows about eighteen inches apart and two feet in the row.

The following perennials might do there and ought to hardy: *Sedum spectabile*, *Monarda didyma*, *Euphorbia corollata*, *Heliopsis Pitcheriana*, *Achillea The Pearl*, *Asclepias tuberosa*, delphiniums, *Dicentra spectabilis*, *Eryngium amethystinum*, Oriental poppies, etc. As a rule these should be planted one foot apart. If cannas are used water freely.

Make your rose bed somewhere else or use part of your border bed. Use same mixture as bed near house, but change "black mellow loam" to two parts and add one part sod from a pasture or roadside. Have bed at least two feet deep, and see that the drainage is good. If the bed is three feet wide you can use two rows, the outer ones within eight inches of the edge. Try Gen. Jacqueminot, Mrs. John Laing, Magna Charta, Mrs. Chas. Wood, Prince Albert, Marie Baumann, Marshall P. Wilder, Paul Neyron, Anna de Diesbach, Earl of Dufferin, Caroline Marniesse, Madame Plantier and Clothilde Soupert. Or you can grow the tea, China and Bourbons, and winter in a cold frame or cellar. You will have to protect the hybrid perpetuals in winter.

HARDY PLANTS.

I have made a border intended to be a division line between my lot and neighboring vacant lot. It is 50 feet from the house, 48 feet long by 3 feet wide, and about the middle of it stands a dead oak tree which I intend to cut off about 15 feet high and cover with vines. Give good list of best hardy shrubs and flowers for a permanent bed. The soil is a sandy loam. Should it be enriched?

In making the border bed have the face of it nearest the house in easy undulating lines never narrower than three feet, and enrich it by the addition of well rotted manure and trench it two feet deep. At the base of the oak put one or two good plants of *Clematis paniculata*, water well in summer. In the fall cut back to within one foot of the ground, bend them over, place a small box over them or place two bricks one each side of vine and lay a short board on top; then place quite a quantity of ashes over the box or board, building the pile cone-shape, wide enough at the base to well protect the roots. For shrubs you can use any of the Tartarian bush honeysuckles. The American snowball, *Spiraea Von Houttei*, *Hydrangea paniculata grandiflora*, mock oranges, lilacs, *Prunus triloba*, *Pyrus Parkmanii*, *Berberis vulgaris*, *Berberis Thunbergii*, *amelanchier*, *Caragana frutescens*, *Rosa rugosa*, and perhaps the hybrid variety Mme. Georges Bruant, snowberry and *Rosa rubrifolia*. You can grow some of the perennials above mentioned in among these shrubs for a few years.

PROTECTING OAK TREES.

It is well known that black oak trees will not stand civilization or much tramping around them. Last year about a dozen old trees about the house died. The old settlers thought it was the result of the previous year's severe drouth. As a future protection I have circled the

remaining ones with about a half wagon load of rich mellow loam, sodding around the circle, and expecting to plant in flowers and vines. What do you think of effect and result?

The chances are that the soil you placed around the trees does not extend out far enough from the trunk to reach the feeding roots. Better level back to lawn proper next spring, sodding up to the tree, and next fall put heavy coating of manure as far out as the branches extend. If the grass under the dirt was not disturbed you can spread the soil out enough, so sodding is unnecessary. Flowers seldom do well in such situations. The tree roots naturally take what moisture there is, and again bands or circles of flowers in such situations do not look well. If you want to plant vines, select a place where two main roots diverge from the trunk, so you can dig a hole three feet deep, fill with good soil and plant our common Virginia creeper.

HARDY LILIES.

Can hardy lily bulbs be planted satisfactorily in the spring and will they bloom the same summer?

Lilium auratum will bloom the first season, but you can't depend upon them afterwards. The following varieties will generally bloom the first year and ought to be hardy with you, if protected, *L. Batemani*, *L. umbellatum*, *L. canadense* in variety, *L. elegans*, *L. speciosum*, and the single and double tiger lilies. All of these can be used among the shrubs except *L. speciosum* and *L. auratum*, which would do better in the bed at the house.

VINES, ETC.

Name the different clematis that will succeed here. Can they be successfully raised from seed sown in the open? Also *Ampelopsis Veitchii*. Would you advise trying to raise the hardy flowers, plants and vines from seed or is it advisable to send to some nursery for the plants?

Try *Clematis Jackmanni*, *C. Henryi*, *C. flammula*, *C. virginiana*, and treat same as *C. paniculata*. It would not pay you to attempt to raise them from seed, nor any of the perennials.

NATURALIZING PLANTS.

Explain the meaning of the above term.

Naturalizing is the planting or sowing the seed, of strong growing plants in some section of one's grounds where they will take care of themselves, forming natural colonies as if placed there by the hand of nature.

PLANTS HARDY IN MINNESOTA.

Will the following prove hardy here: Roses Crimson Rambler, Yellow Rambler, Princess Bonnie and Empress of China, any of the chrysanthemums or asters, the polyantha roses, *Akebia quinata*? What are California roses (annuals)?

The Crimson Rambler and Empress of China ought to be hardy with you, if unloosened from the trellis and wrapped with straw in winter. The hardness of the Yellow Rambler is yet to be proved. Princess Bonnie is a tea and not hardy, nor do I think the polyanthas would be.

The annual rose known under several names, is the *Rosa multiflora nana*, which will produce flowering plants the first year from seed, if sown in heat under glass. *Akebia quinata* might be hardy if in a sheltered situation; it is well worth trying. Most of the perennial asters should be hardy with you. Would not recommend planting any chrysanthemums. W. C. E.

EREMURUS ROBUSTUS.

This noble bulbous plant is little seen in our gardens but it ought to be, as it is one of the choicest early summer-flowering plants there is. It is quite hardy with a light protection, and flowered with us last spring. The flower-spike grows 6 to 10 feet high, bearing on its summit a dense raceme of peach-shaded lilac flowers an inch in diameter, and when in flower it has a noble and striking appearance, well repaying any extra care that may be given it.

They should be planted in an open exposed place where they will get all the sunshine possible; this will help to ripen them previous to time of going to rest which is in September. They start to grow very early in spring, just as soon as they can push through the frozen ground, but they are very tender at this stage of their growth and should be covered at night to protect against late frosts (a barrel is good for the purpose).

A place should be prepared for them in a well-drained situation, the hole to be dug three feet deep and filled in with good soil and old rotted cow manure adding some sharp sand to it. They like plenty of water in their growing season and this should be seen to. If fine spikes of flowers are wanted a good mulching should be given, as this will keep them from drying out, but it should be taken off when the plants show signs of ripening.

This is not a new plant, but strange to say it is not catalogued by many American nurserymen. The only one I know of who has it for sale is F. H. Horsford, of Charlotte, Vermont. What a pity it is that our American firms don't carry such stock. Not long ago a New York firm asked me were we got all our bulbs. I told him from Europe, for the reason we could not get the stock we wanted here, and why should this be? Let the American firms catalogue all that is good and new and we will all be willing to buy our stock on this side of the pond.

Mahwah, N. J.

DAVID FRASER.

COTTAGE GARDENING.

In England what is termed cottage gardening is encouraged by the nobility. On some large estates yearly prizes are offered by the owners to their cottage tenants for the best display in their little gardens. This is done to foster and maintain that feature for which England is noted, and which seems confined to that country alone. The possession and care of these small home plots is a great factor in brightening up the surroundings, and cannot fail to have a refining influence on all concerned.

In these gardens some plants, notably the Madonna lily, seem to thrive as they will nowhere else, as if endeavoring to repay the love and tenderness with which they are cared for. The cultivation of these home gardens for several generations has instilled into the hearts of the English people a love for them that seems a second nature.

Alfred Austin, the poet laureate, well illustrates the English artisan's admiration for his cottage garden where he

describes a tidy little spot, only fifteen feet square, and in complimenting the owner who was in the midst of it, added that he must be fond of it.

Then came the emphatic Answer. I could live in it.

Why cannot we in this country have these same gardens? It appears to be fashionable in certain quarters to imitate English life. In so doing why not imitate those features that will bring the most happiness to the greater number of people? It is true that we do not have large private estates occupied by numerous tenants, but there are many corporations—Pullman's for instance—where these gardens could be encouraged. Now that the eight hour law is in force and generally observed, working men have plenty of day-light leisure during the growing season to attend to small plots of ground around the houses they occupy.

Corporations could obtain the seeds necessary in quantities at a small outlay and distribute them free of cost, and offer a small yearly premium for the best display. It is an experiment well worth trying, and if successful, would have a tendency not only to keep men away from the saloons, but would also have a beneficial influence upon their home life.

W. C. EGAN.

Orchids.

THE DOVE ORCHID. (*Peristeria elata*.)

A glance at the illustration will at once explain the origin of the name. It is also known as the "Holy Ghost Flower" being so named by the Spaniards who discovered it in South America and who were deeply impressed by its remarkable form. The flowers are nearly white, sweet scented, and about 1½ inches across, borne on erect spikes three feet or more in height.

This orchid is not uncommon in cultivation and is generally included in all collections of any size, its peculiar form making it always of interest to the visitor.

Tropical Vegetation.

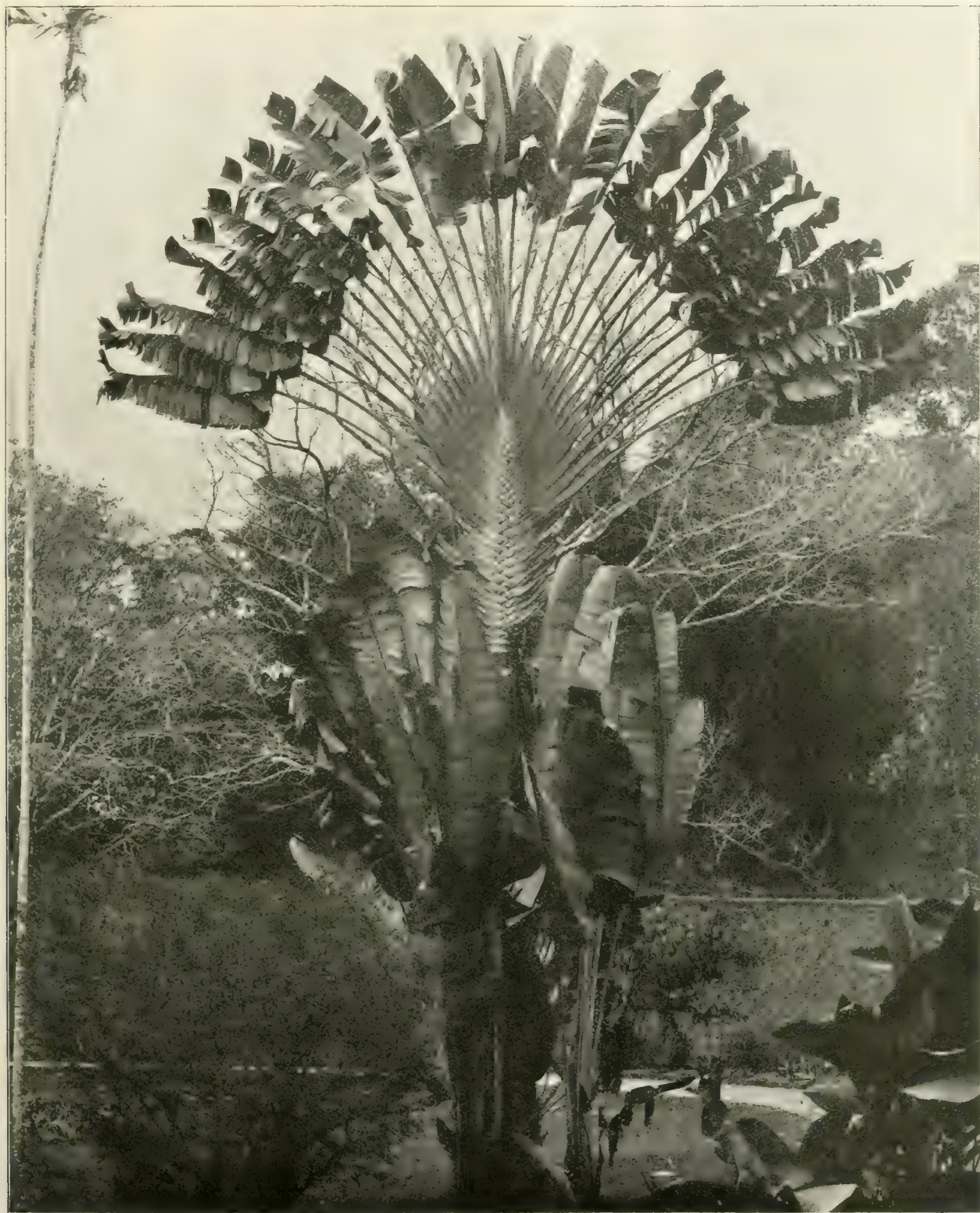
THE TRAVELER'S TREE. (*Ravenala Madagascariensis*.)

The name by which this magnificent tree is known to botanists is that given to it by the natives in Madagascar where it forms according to J. G. Baker, F. R. S., one of the most prominent characteristics of the vegetation on the east coast of the island. Extensive plains are covered with the *ravenala* alone. The stem is sometimes short, with the leaves nearly radical, at other times it forms a woody stem thirty feet high and marked with leaf rings. The same diversity of habit exists in the other species native in northern Brazil and Guiana.

Structurally the *ravenala* belongs to the natural order *musaceæ* and is allied to the banana and *heliconia*. It has a tall simple woody trunk and great two-ranked leaves, as may be seen from the illustration.

The beautiful oblong banna-like leaves are of immense size, being among the largest undivided leaves known, second only perhaps to *Victoria regia* in its greatest development.

The long concave leaf stalks are composed of a tissue partitioned into box-like



THE TRAVELER'S TREE. (*Ravenala Madagascariensis*.)

cells about one-half inch cube filled with a clear watery sap which affords a refreshing drink, whence the name, "Traveler's Tree," usually given to *Ravenala Madagascariensis* in botanical gardens. The same cellular structure is observable in the sheathing leaf stalk of the bananas but on a smaller scale.

An early French traveler specially describes the important part which the ravenala plays in the domestic economy of the natives of Madagascar. The large fibrous leaves cut into rectan-

gular pieces, serve them for dishes or platters, plates, glasses and spoons. At meals they take in each hand one of these pieces of leaf which they fold or roll into the shape of a cornet, then seating themselves around a leaf on which is placed a quantity of rice or other food they fill the cornet in the left hand from the platter, pour it into that in the right hand with which they convey the food to the mouth.

The leaves cut or folded lengthwise along the mid-rib are used to roof their cabins and form a covering healthy, cool

and efficient in excluding solar heat. The foot-stalks deprived of the leaves and spitted together grille-fashion form partitions for their cabins, strong, cool and sufficiently obstructive of sound. Finally the bark of the tree detached from the trunk and flattened is generally used for the floors of their huts.

The leaves in the illustration seem very much torn by the wind as leaves of the banana are also likely to be when grown out doors in exposed positions.

JOHN HIGGINS.

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

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BEECHES.—J. Wilkinson Elliott, a good authority, states that all beeches should be transplanted in the fall.

WILLIAM ELLIOTT, the senior member of the New York seed firm of Wm. Elliott & Sons, died January 16, aged 72 years. Mr. Elliott started in the seed business in New York City in 1854.

DON'T be in a hurry to start your hot-beds; better be a little late and safe, than early and be caught with a crowded hot-bed waiting for suitable weather to plant out. Plants in this condition are never stocky and strong.

IF ON COLD or clay soil, raise your flower beds. The warmth of the sun reaches the roots of the plants easier, and you can control the moisture. If unusual and prolonged rains occur, your drainage prevents damage. If drouth sets in you can supply moisture.

PYRETHRUM ROSEUM from the Orient is quite hardy, but is apt to damp off in summer unless in a well drained position. Those who have had this trouble with it can remedy it by raising the bed in which they are planted. Have the surface fully five inches high when settled. Of late there are many handsome forms of this plant, both single and double.

IN USING branches of lilacs or any hardwood stemmed plants in vases, remove the bark from all that portion that goes into the water. The moisture is thus more easily taken up by the stems and the blooms remain in condition much longer than those that are compelled to draw up the water from the cut end only.

THE Ohio State Horticultural Society has issued a call for a national convention of State Horticultural and kindred societies to meet at the Ebbitt House, Washington, D. C., 10 a. m., March 5, 1897, to consider and recommend the most appropriate federal and state legislation for preventing the introduction or diffusion of noxious insects and fungi in the United States.

THIS HAS BEEN an open winter so far, with alternate freezing and thawing. If your perennials were not protected, notice if any of them are lifted by the frost. *Lobelia cardinalis* for instance is very apt to throw itself out of the ground. If they show signs of lifting and do not possess evergreen leaves like the Oriental poppies, place an inverted sod over them and you may yet save them.

RHUS COTINUS, the venetian sumach or "Smoke tree," of which a beautiful specimen was illustrated in the January 1 number, has very minute flowers of a greenish color, only a small number of which mature seed. The greater part are abortive and are succeeded by long, silky hairs, forming a closed-like mass that almost hides the foliage. These light and feathery appendages suggested the name "smoke tree."

IN YOUR PLANTING next spring bear in mind that all large quick-growing plants such as cannas, castor bean plants, caladiums, musas, large leaved solanums, etc., require generous doses of manure; in fact you can hardly over-do it. Common sense will tell you that any plant that reaches the size and robustness that any of the above will in one season, if well grown, must have a well-filled store house of nutritious food to draw upon.

THE annual meeting of the American Carnation Society will be held at Cincinnati February 18 and 19. There will be essays and discussions on the various phases of carnation culture and an exhibition of new varieties, the merits of which will be passed upon by committees of experts. The society has done much good in preventing the dissemination of varieties not equal to or inferior than existing sorts. Mr. Albert M. Herr, Lancaster, Pa., is secretary of the society.

At the recent annual meeting of the Horticultural Society of Chicago the old officers were re-elected and steps taken looking to the holding of the annual fall exhibition in November next, and also a spring exhibition in 1898. This will be the first spring exhibition given by the society. Resolutions were adopted recommending to the incoming national administration the discontinuation of the free seed distribution by the government, and to the new governor of Illinois a list of names of well known and competent gentlemen who would prove useful members of the park boards in case changes were made.

THE COMMON NAME "horse chesnut" as applied to the *Æsculus hippocastaneum* is supposed to have been suggested on account of the fruit being ground into a

meal and fed to the horses in Turkey, and its resemblance to the fruit of the true chestnut, *castanea*. In fact the common name is a literal translation of the specific one. Some people presume that the name was given it because the leaf scars on the young wood resemble somewhat the imprint of a horse's foot, showing the nail heads of the shoe. It is a curious fact if the first supposition is correct, that the leaf-scars should also suggest the same name.

THE WORD CORK signifies bark, as applied to the outer part of some of the family of oaks. The main cork of commerce is obtained from the *Quercus suber*, an evergreen oak growing in Southern Europe and northern Africa. This tree is estimated to attain an age of fully two hundred years, and after it is twenty years old can be stripped of its bark every six or seven years, but the best product is from trees over forty years old. Its height at maturity is about forty feet. There are a few other varieties of the oak that furnish an inferior cork. Instances are recorded where young cork oaks in the humid Western Port district of Victoria, have grown four feet in a year.

ON January 11 the National Horticultural Society of America was organized in New York City with officers as follows: John M. Hunter, president; W. G. Gomersall, vice-president; Jas. I. Donlan, secretary; N. Butterbach, treasurer. The objects of the society, as we understand it, are to bring about closer relations between the existing horticultural societies throughout the country, and to supply a working organization through which matters of national rather than local interest may receive effective attention. The purpose is certainly good. The address of Secretary Jas. I. Donlan is 51 West 28th street, New York City.

OWNERS of nurseries or fields where constant and thorough tillage is practiced do not worry much if the season be a dry one. If a wet one the soil is worked only when in fit condition, and to keep down the weeds. All well-regulated grounds are tile-drained to carry off the surplus water. In dry seasons thorough tillage closes the surface "pores" and causes a retention of the natural moisture in the soil preventing evaporation. Weeds are in reality a blessing. Their extermination becomes a necessity, and the act of extermination is cultivation. Without cultivation the soil becomes hard and baked and the product dwarfed and poor. Weeds are couriers sent by Mother Earth to remind us of our negligence.

POLYGONUM BALDSCHUANICUM is the name of a new climbing plant now in the hands of M. V. Lemoine, of Nancy, France. It is a native of Turkestan, and grows wild at an altitude of four to five thousand feet. It is an herbaceous perennial with stems woody at the base, and a strong, robust grower, medium sized plants reaching a height of ten to thirteen feet in two months' time. The plant is quite hardy at Paris, and if the stems do die down in winter, fresh shoots come up in the spring. The stems are twining, attaching themselves to any available support. It flowers from June until September. The following is its description as given in an European journal: "The leaves are a beautiful green, cordiform or hastate, the flowers white, faintly rosy, forming long handsome trusses; they are succeeded by winged fruits, white at first, then red, and themselves decorative." The flowers are useful for cutting.

The Greenhouse.

ALPINIAS—STRELITZIAS—MIGNONETTE.

Kindly inform me whether or not the alpinias and strelitzias can be bedded out in the summer like cannas. Also if they can be wintered dormant like cannas; are they fast growers and free flowering?

Would also like to know the best method of growing mignonette in the open ground in summer. SUBSCRIBER.

Alpinias are a large genus of stove herbaceous plants. They want a light but very rich soil and flower freely if conditions are suitable, which are a steady high temperature and an abundance of water. They are truly herbaceous, but when their leaves are turning yellow in the fall, water must not be suddenly withheld, or at any time may they be dust dry, and when dormant should not be in a lower temperature than 60°. A good authority says, for the soil let it be one part loam, one part leaf mould, one part peat and one part decayed manure, with an addition of some finely pounded charcoal. I have never seen them bedded out and in our northern clime don't believe they would be at all satisfactory.

The strelitzia is grown for its remarkable flower, which is most fantastic in form, and a remarkable combination of colors. It is an evergreen hot-house plant of very easy culture. Plants two and three years old flower annually, and large pots or tubs send up a number of spikes. A good loam with a fifth of rotted stable manure will grow it well. It would doubtless do very well bedded out in your tropical bed, but would I believe not flower planted out and I do not see that it would be a great addition to your tropical bed except to add variety. They must be kept growing the year round.

Mignonette is of the easiest culture out of doors. As soon as the ground is dry enough in spring, after spading draw drills 18 inches apart and about one inch deep. Sow thinly and if you want extra fine mignonette thin out the plants to six inches apart. If you could cover the ground between rows and close up to the plants after they are 4 or 5 inches high with an inch of manure and in dry times give a good soaking of water you have done all you can to produce good mignonette. WM. SCOTT.

HEATING A SMALL GREENHOUSE.

(1.) To heat a lean-to conservatory with hot water, how many feet of 1½-inch pipe will be necessary for 160 square feet of glass, the conservatory having one side and one end attached to the brick wall of the house.

(2.) It is proposed to connect the pipes with a wood furnace, whose fire box is about twenty inches square and three and a half feet long. How many feet of pipe will be needed in the firebox of the furnace, over the fire, extending from end to end? The furnace stands about ten feet from the entrance of pipe to conservatory. The furnace will hold fire all night.

(3.) How is it best ventilated?

Strathroy, Ont. C. E. GERMAN.

1. The area of glass is very small and it would have been better if Mr. German had given the length and breadth of house, but supposing it is 20 ft. long and 10 ft. wide the roof surface would be 200

ft. For that amount of glass exposure it would require six runs of 1½-inch pipe. If it is wider than 10 feet and not so long, it would want the same amount of pipe and more runs. As the house is a lean-to the pipes should be all attached to the front wall, as no resistance to cold will be needed on brick wall side. The simplest and best way to arrange pipes would be to let the flow pipe when entering house rise to the highest point at once and at the elbow where you start the horizontal pipe tap in a 1½-inch pipe running it up the side of wall where it is least unsightly; this is for an air vent. Any air that is formed in the heater will always rise to the highest point and must have a vent, for it will not go down hill and would if allowed to accumulate stop circulation. From the highest point, which can be only a few inches beneath the bench, run your pipe to the further end and across the end, dropping from the highest point to further end about one inch or less, if you can manage that. Then return again to starting point with another drop of an inch and so on till you have the six rows of pipe up. Be sure that from the air vent you have a continual drop; ever so little is sufficient; one inch in 100 feet is just as good as 1 ft. in the same distance. You will see by the arrangement I suggest that the pipes are to be

one above the other, which is much the best way, and fastened on the front wall by what steam fitters know as hook plates.

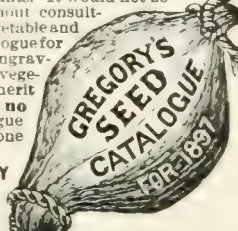
2. A coil of pipes to heat this house should be 3 ft. long and 2 ft. wide and 2 tiers; that is, 10 1½ inch pipes, 5 one above the other. Let the flow pipe leave the highest part of the coil farthest from doorway and let the return pipe enter the

[CONCLUDED PAGE 156.]

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are known the country over to be exceptionally reliable. They have a reputation of forty years back of them. They are sold under three warrants. It would not be wise to plant without consulting Gregory's Vegetable and Flower Seed Catalogue for it describes with engravings several new vegetables of great merit to be found in no other. Catalogue sent free to anyone anywhere.

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coil at the lowest part of the coil nearest the furnace door. Near the furnace attach to the return pipe a $\frac{3}{4}$ -inch pipe which should run up a few feet higher than the highest part of your heating pipes in greenhouse and that should be attached to small iron or wooden tank, which is your feeding cistern. When that tank has water in it your apparatus is in working order. When the system I have described is followed out you cannot have air in the pipes and there will be no pet cocks or any trouble of any kind so long as there is water in the feed cistern.

3. The best method to ventilate is by continuous lifting sash from the roof; let the sash be 2 feet deep from the edge on the south side. There is nothing like an abundance of ventilation. If you have upright glass in front it would be well to have it made in sections of 3 or 4 ft. in length and hinged. It would be found of the greatest use to ventilate in the hot summer months.

In the plan for circulation of water that I have recommended you will notice that it is one continuous flow in a single pipe from the start to its return; there are no branches or manifolds and the circulation must be perfect.

WM. SCOTT.

PHOSPHORIC ACID AS A FERTILIZER.

What proportions of phosphoric acid and water should be mixed to make a liquid fertilizer for house plants? (The phosphoric acid I can get in either the liquid or the glacial form.) I am aware this would be an expensive fertilizer if largely used, but I have only a few plants.

E. W. W.

Phosphoric acid in quantity would kill plants, as no plant will grow in any strongly acid solution. The phosphoric acid must be combined with some base to form a neutral salt before the plant will use it.

Phosphate of soda may be used for this purpose and can be found in cheap form (18 cents a pound) in the shops. Phosphate of ammonia (80 cents) would be more active.

Salts in solution for manuring plants must be used in very dilute form. One part in a thousand is usually considered the limit. This is strong enough for first trial.

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As a specimen decorative as well as a flowering plant for the greenhouse or private conservatory, it is THE FINEST NOVELTY IN RECENT YEARS. It makes a brilliant and constant show, flowers quickly and freely. The plants are easily produced in a short time and at such trifling cost that they can be lavishly used for house decorations at times when similar effects with expensive plants would mean a great loss.

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Early last summer we sent trial plants to members of the Special Cannas Committee of the National Society of American Florists, who test all the new Cannas and report officially on the same. Their words carry the highest disinterested indorsement.

MR. JAMES DEAN, Chairman of that committee, and chief of New York's horticultural display at the World's Fair, says: "Burbank is a new giant flowered forerunner of a new class of these beautiful flowers."

MR. D. ZIRNGEBEL, of Needham, Mass., of the same Committee, who tested it with all the best new ones, says: "Yellow Burbank is the best yellow in cultivation now, very large flowers of a handsome, bright shade of nearly pure yellow."

MR. J. T. TEMPLE, of Davenport, Ia., of this Committee, says: "I consider Burbank one of the best of this year's novelties." J. W. C. DEAKE, of Asheville, N. C., another member of this Committee, says, Aug. 27: "Our Cannas Burbank is in full bloom, and such a beauty! As handsome as an orchid, with petals 2½ inches in diameter."

MR. FRED KANST, head gardener of South Park, Chicago, and an expert judge of Cannas at the World's Fair, says: "The flowers were much admired in the park this summer. The foliage is like rubber; it is always good; you can't tear it."

"YELLOW CROZY."

(VAUGHAN'S NO. 1.)

terminal lateral flower heads from the main spike—often as many as six or seven. In the full sun it bleaches less than any yellow cannas we have seen, owing to its good substance. It is, in short, just the color and habit of plant which has been sought for the past five years, a pure "Yellow Crozy."

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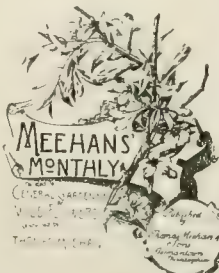
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SOWING SEEDS OF ACORNS AND NUT TREES.

There is a great deal of pleasure in looking on trees we have raised with our own hands. With a little care many a one could raise seedlings, which could be set out on the lawn as memorial trees, adding much to the interest such trees often afford.

In the case of acorns and most all nut seeds it has been found that spring is a better time to sow than fall. There are too many risks to run when fall sowing is practiced. Frost and vermin are to be combatted and more attention given to covering than when the work is done in spring. The belief that such seeds as have been mentioned required the action of frost to make them grow was at one time much more general than it is now. As a matter of fact frost is an injury to some nuts, the English walnut for one, for when this sort is sown in the fall it is usually rotten by spring. Let any one who has acorns or hickory nuts or walnuts on hand place them at once in slightly moist soil, keeping them in it till the ground is in condition to work in the spring, and the seeds will be in the best possible condition. Get a box and mix the seed and soil together, placing the box in some cool place free from frost. The harder shelled sorts will be the better for having the soil rather more damp than acorns require. The latter seem suited if but enough moist material surrounds them to prevent any loss of weight.

When the season has advanced enough that sowing can be properly done, get the seeds into the ground as soon as can be. I like to cover seeds to about their own depth. That is to say the top of a hickory nut an inch in diameter should be an inch below ground, nothing less.

When practicable, a covering of leaves or straw should be placed over the ground after sowing. It is a great help, keeping the soil moist and loose, permitting the shoots to come to the surface easily when growth starts. The covering should be kept on with brush or something sufficient to keep it in place.

Both oaks and hickories are hard to transplant, so are walnuts. Nurserymen transplant the seedlings usually after two year's growth, when they lose but few of them. Hickories are particularly hard to transplant. Amateurs who want but a plant or two of a kind, would perhaps, find the placing of the nuts where they wish the trees to be as satisfactory a way as any. Two or three could be placed together all but the strongest to be removed should more than one grow.

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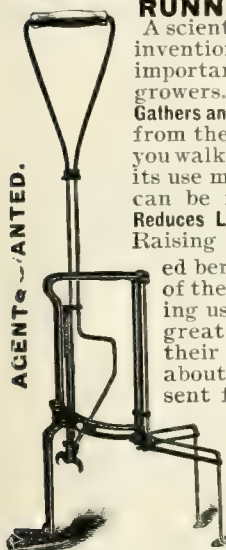
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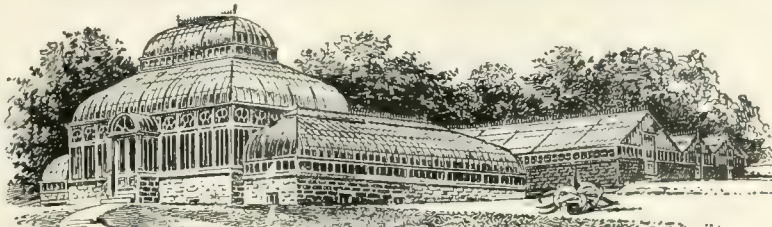
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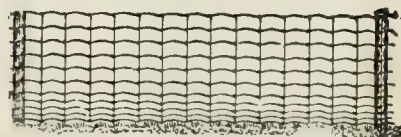
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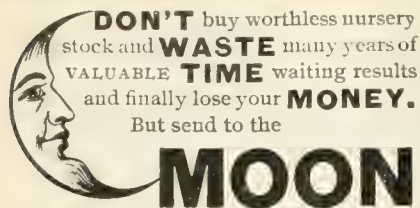
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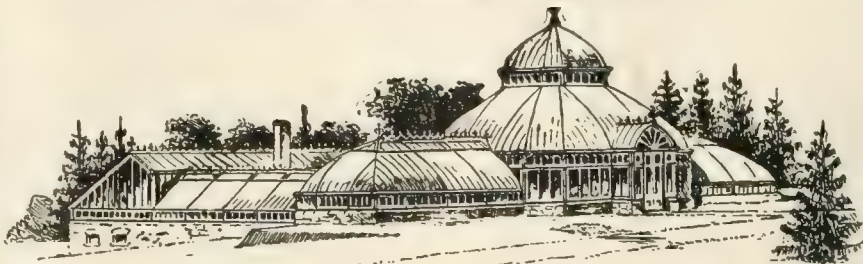
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CHICAGO, FEBRUARY 15, 1897.

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No. 107.



HYDRANGEA OTAKSA ON GROUNDS OF HON. J. S. FAY, WOODS HOLL, MASS.

The Flower Garden.

HYDRANGEA OTAKSA.

The plant represented in our illustration is one of several noble specimens which every year adorn the grounds of Hon. J. S. Fay, at Woods Holl, Mass. When photographed it was fifteen feet in diameter and seven and one-half feet high and bore two hundred and twenty-six trusses of bloom. Mr. M. H. Walsh, the gardener, gives his method of culture as follows:

"I let the plants remain outside until about December 15th. They are then pruned back, leaving about two buds above last year's growth, and placed in a cellar, where they are kept until about May 1. Freezing in the early winter seems to ripen and harden the wood, and I find that they will stand 15° of frost without injury. They seem to grow best when fully exposed to the sun, the flowers being larger, the foliage

brighter and the wood better matured than when grown in partial shade. A light soil composed of equal parts of loam, leaf mould and sand seems best suited to their requirements. To this is added ground bone and unleached wood ashes in the proportion of one quart of bone and three quarts of ashes to one wheelbarrow full of soil. Hydrangeas are gross feeders and require an abundance of water. When the flower buds appear liquid manure should be applied and repeated once a week, during the season."

STARTING FLOWER SEEDS.

Many of our readers are already planting their gardens in their "mind's eye," and it is well to call the attention of those who have had but little experience to a few simple rules that may be of service.

All seeds, as a rule, do better with a light soil immediately surrounding them. This allows their tender infantile roots easy access to their feeding grounds.

Hardy annuals are often prefixed in catalogues with the letters h. a., and are best sown outdoors as soon as the soil is warm enough. April is early enough in the north with a few exceptions. Choose a time when your soil is dry and friable enough to work without lumping up or adhering to the spade. Spade up the bed, break up all lumps and level with a rake.

If planting in rows and your soil is moderately light, with a lath or narrow edge of a board or rake handle press in a groove about an inch deep. If the soil is rather heavy, having a large proportion of clay, then pressing the groove might pack the soil under it, and it is best to draw the end of the head of the rake across the bed, which makes the groove without packing. In the meantime prepare some soil by adding sand or leaf mould until it is very light and open, sifting it through a fine mesh. If this is not convenient, dry the soil a little and on a hard surface crush it fine with the back of a shovel, saving the finer portions. Put this fine soil in the trench, filling it nearly

to the top. Sow your seed thinly, and then sprinkle lightly with your fine soil. When this is done press down the soil firmly along the row. The natural moisture in the soil at this season is sufficient at this stage to start germination, but should the weather turn hot and dry it is better in a few days to sprinkle lightly along the rows.

When the plants appear, thin out, saving some to replenish any gaps. Tap-rooted plants do not transplant readily unless when quite young, but by carefully using a garden trowel pushed in deeply at one side and the plant pried out, using the other hand against the ball of earth to keep it in place, it can be done successfully. Some hardy annuals, like poppies, are best planted in the fall.

The half hardy annuals, sometimes marked h. h. a. in catalogues, are best started in hotbeds or greenhouses in flats or pots and in light soils, but there are some of these that can be sown outdoors by waiting until warmer weather, say the latter part of May, but their time of blooming is delayed over those grown under glass.

Hardy and half hardy perennials that bloom the first year from seed have to be treated as tender annuals in order to get them strong enough to bloom.

Hardy perennials of the more common kinds, having large seeds, can be sown in the open border at any time from April to June, or in the fall, but those with small seed had better be sown in a hotbed or cold frame, using in all cases where the seed is small a fine soil. While many perennials germinate as quickly as an annual, some require a much longer time, some even a year.

When sown in hotbeds the plants require shading from the hot sun during the heat of the day. Newly transplanted plants also require shade. Better transplant on cloudy days or toward evening.

The surface of the soil in flats or pots under glass should never be allowed to become dry. Neglect of this point is often fatal. Plants in these situations require more watching than those in the open, because in the latter position there is a natural moisture in the surrounding large body of soil. When watering plants in flats or pots use a light fine sprinkler, so that the force of the water falling at the roots will not wash the light soil away from them.

ALSTROMERIA—ANEMONE—IRISES.

We have bought alstromerias of various sizes but never does one survive transplanting. How can we succeed with it?

Does anemone fulgens ever bloom in this climate, and if so how is the marvel brought about?

We are not as successful with the beautiful English and Spanish irises as could be desired. If left uncovered the bulbs never appear; seem to succumb to the first winter's frost; if covered with a frame and leaves they start too early and are bleached and drawn; what is just the right way to manage them?

Mrs. F. N. B.

Alstromeria, the Peruvian lily, is easily grown in any well drained soil, in a sunny position, but must be well protected in winter. If you obtain good plants, well taken up so their long tender roots are pretty well saved, and all broken ends cut off smoothly, you should have no trouble in starting them.

Anemone fulgens can be wintered in a cold frame, same as you would pansies, planting them in inverted pieces of sod

cut about four inches square, removing sod and all to a shady border in the spring. Or plant in well drained soil in a cold frame and let them bloom there, shading the frames when in bloom.

The English and Spanish irises do not in ordinary winters need a cold frame. Select a situation where the water will not stand in winter, and in the fall cover with half rotted leaves.

Try the ranunculus, planting in light soil, in February in a cold frame. In the fall fill your cold frame well up to the glass with leaves, put on the glass and shutters, throw some straw or hay over the shutters and do not open until some warm day in February. The chances are that the soil is not frozen. Choose a bright sunny day, take away all the leaves and put on the glass to warm up the soil before planting. If the weather is not too hot and dry at blooming time you will be more than repaid for your trouble. Shade the frame as the weather grows warm.

THE IRIS.

Nothing in its season attracts more attention in the garden than a variety of irises in flower, and nothing is easier to grow. As a rule they are not particular as to soil, growing well in most any kind of soil if it is well enriched with good rotted manure. The iris is a plant that will stand a good deal of neglect and should be left undisturbed for a number of years, as large masses always flower the best. When they do get too large they can be lifted and divided in August or the early part of September and reset in new soil. We grow a great many irises and in great variety, and no garden should be without them. Flowering as they do from April till the end of July, the early ones make nice companions to the spring-flowering bulbs, and the late-flowering ones help to keep the garden gay till the summer bedding plants are in flower.

Irises like plenty of water in their growing season, more especially the *Kämpferi* and Siberian varieties. They do not as a rule like to grow in the shade, always doing better when planted in the open. Some of the varieties do well planted on the margin of a lake or stream or naturalized in bogs and wet places. The iris as a rule is at home in just such places and is seen at its best planted in this natural way.

The bulbous species like a dry, well-drained soil and should be planted in an open, well-exposed part of the garden. These bulbous irises should be left undisturbed for a number of years. They will grow and flower better in this way and are perfectly hardy with us with no protection. We grow them in the bulb beds, which are raised about six inches above the level of the garden.

Amongst the irises we grow *I. reticulata* is the first to flower. It is a lovely species and comes in flower about the middle of April. It sends up its flower spike before the leaves are an inch high and grows to a height of about a foot. The flowers are violet, blotched yellow and are highly scented. It may not prove hardy in some localities but with us it does with light protection. It takes it a few years to get well established and it may not flower the first or second year; such was the case with ours.

Iris Germanica (German iris) is a common garden plant, but one of the showiest of the whole iris family. There are a great many varieties of this iris but a selection has to be made as there are so

many dirty colors amongst them. These irises grow very fast and are very free flowering, the prevailing color being purple and yellow. When planting them the rhizomes should be left just level with the ground for if planted below the surface they are liable to rot. They do not form much roots and should be planted in August; as if done later they are sure to get heaved by the frost.

I. pumila is a dwarf growing flag, growing four to six inches high and is very free flowering. It makes a fine edging plant for borders if grown in a broad line. It also looks well in masses. It flowers in spring and has deep violet flowers.

I. chamaeiris is a fine dwarf iris and with us the earliest of the dwarf forms. The flowers are deep blue.

I. cristata is one of the very best dwarf irises we have. It blooms in May and the flowers are light blue striped yellow, the petals nicely fringed.

All these dwarf irises have small rhizomes and should be planted in a well drained place, and quite close together if a good show of flowers is wanted.

I. Kämpferi is a stately growing plant that should find a place in every garden. This iris needs a good soil which before planting should be trenched at least two feet deep and plenty of rotted manure worked in. It forms very large roots which soon exhaust the ground. When the plants become well established a good coating of manure should be put around them in spring; this will help to retain the moisture and at the same time feed them. They like plenty of water, and this should be seen to in dry seasons; if neglected the leaves soon begin to turn yellow, detracting from the beauty of the plants. The flowers of this iris are very large, six to ten inches in diameter, but like the German iris there are a great many dirty colors amongst them.

I. sibirica is a slender growing species, and well adapted to grow in connection with the *Kämpferi* iris. They grow about the same height and flower the same time, sometimes coming a little earlier and lasting till after the Japanese irises are past. The flowers are not very large and in color they range from blue and white to pure white.

I. Monnieri is the last of the irises to flower with us. It is a large growing species, the flower stalk attaining a height of four feet. It is quite distinct from the other species, the leaves being dark green and not unlike those of a gladiolus. The flowers are very sweet-scented, golden yellow margined with white.

I. pseudo-acorus, the common water flag, is a stately growing plant and is best naturalized in some bog or grown on the margins of a brook or water lily pond. It is a tall growing plant and has clusters of yellow flowers followed by bunches of showy scarlet berries.

I. xiphoides (English iris) is a beautiful bulbous species of which there are a great many varieties. They are quite hardy if planted in a well-drained soil. They bloom in early summer, but like some of the other bulbous species, they take a year or two to get established and may not flower the first year after planting.

I. xiphium (Spanish iris) is another fine bulbous species of easy culture. This iris begins to grow early, and after it gets a few inches high it remains stationary during the winter. Its tall narrow leaves do not mind the frost, remaining green all winter. It begins to grow again in spring and flowers in June. There are many varieties of this iris, but a selection may be made and only the distinct varieties



A FIELD OF IRIS KEMPFERI IN BLOOM, TOKIO, JAPAN.

grown, as so many of them are near alike.

The bulbous irises after flowering die down and should be planted in small clumps or rows. Where other summer plants are planted in this way a bare spot in the garden is avoided. There are many more species and varieties all worth growing, and they should find a place in all herbaceous gardens.

Mahwah, N. J.

DAVID FRASER.

GROWING TENDER BULBS IN GOLD FRAMES.

I would like to ask Mr. Fraser the following questions regarding the article that appeared under above heading in GARDENING for Dec. 15.

1. Is it necessary to have a sunken box with a bottom in it and drainage underneath this?

2. How deep should the frame be that goes over the box?

3. Should the sash be put on at once after the bulbs are planted?

4. Are not the frames to be filled with leaves or mulching to exclude frost?

5. Should no frost get near these tender bulbs?

6. How can we keep out frost with the thermometer sometimes registering 20° below zero?

Mrs. F. N. B.

1. Yes it is necessary to have a sunken box to grow these tender bulbs successfully. The box should come level with the bed, and have a good strong bottom in it with drainage if the location is in any way wet. In this way you have the bulbs under your control as regards watering and ripening the bulbs; it is also a security against mice and rats, which are very fond of these bulbs, and it

helps to keep the bed dry, which is one of the most important points. What is wanted is to keep the bulbs from growing much before spring.

2. A frame 9 inches in front and 15 inches at back is just about right. We use the French frames for covering our bulb beds; the sash is 4 feet wide by 4½ long; the 6-foot sash makes the bed rather wide.

3. As the bulbs are not planted till late in the fall it is necessary to put on the sash, but remove them on all fine days so as not to excite the bulbs into growth. Keep all rain from them or they will begin to grow and you may have trouble to keep the foliage from freezing.

4. No, the frames should not be filled with leaves or anything else. The soil in the frame being on the dry side, frost does not have the same effect it would if the soil was wet; and if the bulbs did begin to grow, the mulching would tend to draw and bleach the leaves.

5. No, frost should not get near the bulbs. Plant them about four inches deep and bank around the frame with long manure, covering the sash with straw or hay with shutters or mats on top. We use old wood-ash bags sewed together the length of the frame, putting them three deep over the frame. These are handy to roll up and keep all frost out. We always uncover every day if the weather is good, and give plenty of air.

6. The above covering has kept out 12 degrees below zero with us. I think if you follow the same you will have no trouble. Our frames are protected on the north and west by wind-breaks 10 feet high, made of corn stalks.

Mahwah, N. J.

DAVID FRASER.

ALSTROMERIAS.

I propose to adopt a suggestion made in GARDENING, vol. 3, page 6, and plant these bulbs in wire boxes or frames, making the boxes six inches across and of the same depth, with a 2-inch mesh. Will these dimensions answer the purpose? Or would it be better to make the boxes large enough for 4 bulbs, and if so, of what dimensions.

R. M. W.

Toronto.

I would not advise a wire basket of less dimensions than a foot in diameter and a foot deep. If made square, ten inches in width would do. This plant spreads rapidly in good light soil, sending out long tender fleshy roots, hence some depth and width is requisite in order to allow considerable of a ball of soil to be taken up in the basket when removed, thus diminishing chances of root disturbance.

See GARDENING for Nov. 1, 1896, where is illustrated a group that remained out over winter under extra protection. That group bloomed earlier than some wintered in a cold frame, showing that even when grown in these baskets the removal causes some disturbance. It is a lovely flower. Try some plants both ways, but be sure of good drainage.

W. C. E.

UNSIGHTLY GOLD FRAMES.

If your cold frames are in the vicinity of the flower garden be sure to grow something extra to put in them after the pansies and other hardy plants are out. Nothing looks worse than a frame full of weeds when it could be made a place of beauty. Sow some stocks or antirrhinums now and have them ready to plant

out just as soon as the frames can be had, which will be about the 15th of April. By doing this you can have stocks in flower very early; the antirrhinums will last the longest, but then everybody likes the ten-week stocks. What you plant is merely a matter of taste so long as you plant something; and I think you will be well repaid for the extra trouble.

DAVID FRASER.

HERBACEOUS PLANTS FOR LOW AND DAMP BORDERS.

A great number of our hardy plants delight in moist ground, others may really require the opposite conditions, and still another very large section, which we generally consider to do well in any ordinary good garden soil, are also suitable for the lower ground, but in this case it is often necessary that the land should be well drained.

If the ground should be so low as to allow the surface water to gather in larger or smaller pools in spring or during prolonged heavy rains at any time in the year, the land must be drained or else the lowest point may be dug out a trifle more and the surrounding ground graded off so as to drain all surface water into the depression, where bog plants might find a suitable home. Or if the land be springy we could create an additional attraction by laying out a pond of larger or smaller dimensions even though there be not enough water in the dry season to supply a constant flow; we could prevent this pool of water from getting stagnant by planting all sorts of water plants in and around the little pond.

The surrounding ground can, if necessary, all be tiled and drained into this depression, then the borders may be laid out according to individual fancy and taste. As to water plants I shall have nothing to say; I leave that part to such experienced men as Messrs. Pettigrew, Tricker, Bissett and others whose frequent suggestions can safely be followed in all cases.

Trees and shrubs may seemingly be in the way of the border. I would rather not disturb any of them; you can manage nearly always to get around these obstacles in one way or another; we do not care for straight lines nor for an even width in these borders; projections and recesses will add considerable to the beauty and general aspect; no matter how abruptly or sudden those bends in the outlines may appear to our eyes before the plants are introduced, by proper planting they may be so constructed as to form the most interesting features in the borders.

In the projecting parts, plants of medium or taller growth may find a home, screening from our view, as we approach, the lower subjects in the recess until we are close to or opposite this spot, which coming on us unexpectedly is appreciated all the more, especially if it contains some rare or particularly interesting plants.

In the lowest part or near the water's edge *Iris Kämpferii* will be right at home; don't scatter them all around but form a compact mass of them; you can't make the patch too large. For finishing off the edges, the variegated *I. pseudoacorus* var. can be used, so will either the red or white monarda answer the purpose and if the red color is for some reason objectionable, take *Chelone obliqua*, *C. obl. alba*, *C. glabra*, or the beautiful *C. Lyonii*, all of which bloom until very near October. *Cardamine pratense* fl. pl. will grow luxuriantly here, sending up its many-flowered stems from every growth

during the spring months to a height of 15 to 20 inches; the flowers are pale blue with a purplish tinge and the leaves are pinnate, broad and rounded at the ends.

Astrantia carnifolia, *A. major* and *A. helleborifolia* love a moist place; they flower in May and June, the first named bears pretty white flowers and is the dwarfest of the three, growing only about 10 inches high. The other two have rosy pink flowers and attain a height of nearly 2 feet; they are not difficult to manage under these conditions but in dry places they very often refuse to establish themselves. *Anagallis tenella*, a pretty bright pink flowering perennial blooming for several months during the summer, should be grown in a moist place; it is a trailer and never grows more than 3 to 5 inches high. All the polygonatums are fit subjects for the same situation and are sure of being appreciated when planted in masses; single plants cannot make a show.

Astilbe rivularis, with spiræa-like foliage and flowers of a whitish color suffused with red should be planted in low ground where its many-flowered panicles will come out in perfect shape, which they often refuse to do in dryer places; here it will attain a height of 3 feet or more and flower during July and August. *Anemone rivularis* is one of the moisture loving species and is well worth growing; its flowers are white with a purplish disk, grows about 18 or 20 inches high.

The perennial ranunculuses do well under such circumstances but the ground should be well drained; the double white-flowering *R. aconitifolius* and *R. amplexicaule* continue to bloom from early spring until June or sometimes longer, the former growing from 1 to 2 feet high, the latter only 6 to 8 inches. *R. bulbosus* is golden yellow, blooms until July and is a few inches higher than the last mentioned. *R. acris* fl. pl., the common double buttercup, flowers nearly all through summer and varies considerable in height but usually does not grow over 2 feet. *Caltha* are genuine bog plants; the water does not hurt them, still they also submit to a treatment in an ordinary border. *C. palustris* fl. pl. and its varieties bear double yellow flowers, attain a height of from 12 to 15 inches and are very effective during the spring months, their blooming time. *C. leptosepala* has pure white flowers, grows to about the same height and continues to bloom up to June.

Lobelia cardinalis cannot be recommended too highly for moist places; under cultivation the individual flowers are considerably larger than in a wild state, the stems are stouter and more thickly set with flowers, lasting for a long time in perfection; height about 2 feet, blooming time from July to September. *L. fulgens* is an equally good brilliant scarlet flower, much resembling the first named in general appearance and in height, but begins to show its flowers 4 or 6 weeks earlier. *L. siphilitica*, our light blue erect large flowering native variety is well worth growing, blooming for a long time in summer and autumn; it does not grow as high as the scarlets and the flowers are more densely crowded along the stem. A number of hybrids between the several red and blue flowered herbaceous lobelias are surprisingly attractive; they all do best in moist and partially shaded positions.

Lysimachia clethroides is an upright growing plant about 3 feet in height, loves a moist ground and produces its long spikes of white flowers from July to September. If planted in an ordinary border its height will be reduced consider-

ably, but in low places the flower-spikes grow much longer and their lasting qualities are improved. *Spiræa aruncus*, *S. Humboldtii*, *S. ulmaria* pl., *S. astilboides* and *S. a. floribunda*, have white flowers and are admirably adapted for low ground. *S. palmata* and *S. a. lobata* or *venusta*, the first a very deep brilliant carmine pink of rather dwarf and compact growth, 1½ to 2 feet, blooming during June and July, the latter a very tall and remarkably beautiful sort with rich pink flowers, disposed in broad clustered panicles, blooms at the same time; height under favorable conditions about 7 feet, but in the ordinary border only 3 to 4 feet. All the herbaceous spiræas love plenty of moisture and rich soil; their flowers will remain in perfection much longer and their foliage retain its full beauty throughout the summer months under such conditions.

Thalictrum aquilegifolium, with white, purple, lilac or rosy tinted flowers in large panicles during June and July, will also attain a much greater height near the water than in the borders; the feathery flowers are very freely produced and are very effective in masses; height 4 to 6 feet or over. *Polygonum amplexicaule*, with its rosy pink drooping flower-spikets, should be included in the list as it blooms from August to October and forms a neat, compact plant about 3 feet high. If a very tall subject is wanted in some special location, the luxuriant growth of *P. sachalinense* will be found very effective, though ordinarily it is considered too tall for general purposes, growing from 9 to 12 feet high in one season; its flowers are yellowish, springing from the axils of the leaves in little racemes during August and September.

The *Hibiscus moscheutos* and *militaris* delight in moist ground and produce the grandest effect during midsummer until late in August or September, with their numerous large bright colored flowers; one is white with a large vivid crimson center, the other delicate rose color with a darker eye; both grow to a height of about 4 feet and look more like robust growing shrubs than herbaceous plants.

Many other hardy species might be introduced here, such as *myosotis*, *funkias*, the variegated *acorus*, various native asters, *Pyrethrum uliginosum*, *corydalis*, *boltonias*, *hemerocallis*, several of the anemones, etc., all of which are desirable and well worth growing, and in connection with the above mentioned would give us an uninterrupted display of interesting flowers throughout the entire season, but I am surely not expected to give here in this limited space a complete list of all the moisture loving hardy plants suitable for our climate, for their number is very large, especially if we also include those species which under the mild sun of European countries seem to do well in ordinary borders, while in our dry atmosphere they either require constant attention and daily waterings, or they must be planted in moist positions.

Rochester, N. Y.

J. B. KELLER.

Trees and Shrubs.

CERCIDIPHYLLUM—HYDRANGEA.

The *Cercidiphyllum japonicum* (illustrated in your issue of Jan. 15) was raised from seed brought to this country by the late President Clarke of the Massachusetts Agricultural College, who I think introduced the plant here, though I have seen it stated to the contrary.



DOUBLE-FLOWERING PLUM (PRUNUS TRILOBA).

This tree was planted some fifteen years ago and is now over thirty feet high. To me it is one of the finest ornamental trees in cultivation. As Mr. Falconer says, plenty of moisture is necessary to its successful cultivation. No tree or shrub on my place do I watch so carefully in this respect.

I am rather surprised that Mr. Egan should recommend *Hydrangea paniculata grandiflora* for the third shrub on a small place. For six weeks in the fall it is very pleasing; the remaining forty-six weeks of the year there is nothing to its credit. I would substitute *Berberis vulgaris*. When I left my place the first week in January the berberises were a glory, while the hydrangeas had been simply a bundle of sticks since the first of October.

H. HEATON.

Amherst, Mass., Feb. 8, '97.

DOUBLE FLOWERING PLUM. (*Prunus Triloba*.)

I send a photograph of a double flowering plum in bloom in my grounds, which so entrances all visitors that they desire to secure a plant at once.

The specimen shown has been planted about twelve years, and at the base has a diameter of fifteen feet and stands about eight to ten feet high, each stem before the leaves expand being covered with bright red buds and pink flowers of the size shown.

Some seasons it is in bloom for late Easter, and its long stems, from five to six feet long, thickly filled with flowers, are a delightful addition to the stock of usual flowers for that season.

This plum is very hardy and free from insects, and requires no special care in its cultivation. It is said to be subject to the fire-blight that affects apple trees, but my observation and experience leads me to believe that thorough drainage is a sure

preventive, as during five years of partial drought no fire-blight has been observed on apple or other trees in this vicinity.

Davenport, Iowa. J. T. TEMPLE.

WOODBINE—SAVIN JUNIFER.

1. Please tell me what "woodbine" is.
2. How shall I treat the savin juniper to make it more bushy? I have a large clump but it is very loose and straggling. How can I increase it? By cuttings, or layering the outer stems?

Nebraska.

WM. FROST.

1. The term "woodbine" is often used in English poetry, referring to the English honeysuckle (*Lonicera periclymenum*.)

2. To make *Juniperus Sabina* bushy cut the branches severely into the old wood. They will break out from the inside. Let the upstanding shoots grow and keep them pinched every year. In two or three years the plants will be bushy. When you have young ripe wood layer them in the usual way. Let them remain two seasons on the mother plant and then transplant them. Cuttings would be unsatisfactory in your case as you would not have the conveniences to handle them to good advantage.

J. R. TRUMPY.

JAPAN MAPLES—MAGNOLIAS.

Tell us something about the cultivation and management of those varieties of Japan maple, naming them, that succeed in the vicinity of Chicago.

Also about magnolias, especially those varieties that retain the bush form and bloom with their foliage.

F. N. B.

Crown Point, Ind.

The Japanese maple cannot be depended upon in the region around Chicago, especially where subject to the influence of the Lake winds. Some varieties will

live a number of years if in a protected situation, but they are never in a vigorous condition. *Acer japonicum* and its varieties *macranthum*, *microphyllum* and *palmatum* come nearer thriving than any others, and might succeed at Crown Point, Ind., if sheltered. The *polymorphum* section seem more tender, the hardier forms being *atropurpureum*, *dissectum*, *atropurpureum* and *sanguineum*, but we doubt if they would prove vigorous in northern Indiana.

Magnolia acuminata, a tree growing sixty to ninety feet high, is hardy without protection. A small plant of *M. speciosa* bloomed last spring near Chicago, having been unprotected the previous winter. *M. Soulangeana* has done fairly well in a sheltered position and the tree well wrapped with straw. *M. stellata*, more dwarf than the others, requires the same protection, but does not do as well. All these can be kept to a bush or tree form.

W. C. E.

JAPANESE MAPLES.

EDITOR OF GARDENING:—Can you tell me what is the matter with and how to treat my Japanese maples?

They have a good bed over two feet deep of rich soil, best of care and culture. They look beautiful early in the spring, then the leaves curl and dry up at the ends and sides, presenting the appearance of being burned, as though they were sprinkled with water in a burning hot sun. I have been so disappointed the last two summers have been inclined to take them out.

J. F. P.

New Jersey.

It may be some little comfort to our correspondent to know that his experience is that of every one else who has had to do with Japanese maples. It is generally supposed to be caused by lack of moisture in our climate. These maples

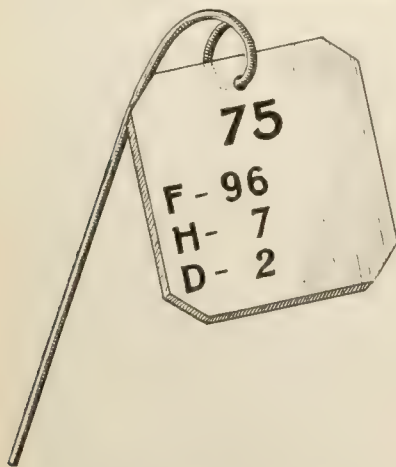
do not mind the heat, they get this in their own country, but with it is much moisture. A good heavy mulch about the plants favors the preservation of the foliage, promoting coolness and moisture. Planted in situations partially shaded in the afternoons, their leaves suffer but very little.

LABELING TREES AND SHRUBS.

In embellishing one's home surroundings with trees it is often interesting in later years to know just when certain ones were planted and the growth they have made. Many planters are careless in remembering even the varieties, and friends admiring them can gain no information from the owner other than that it is an ash or a maple. There are so many varieties of the ash and maple in cultivation that this information is almost useless. A garden memorandum book should be one of the household treasures and guarded with jealous care.

If the place is small, so that each tree planted can be readily singled out by a description of the location it occupies, a memorandum describing such location, giving the botanical and common name (easily obtained from the nurseryman) should be written down, the date of planting, its height and the diameter of its trunk at the base should also be recorded.

Where a place is extensive and numerous plantings are made, it is well to adopt a system of permanent identification by means of recorded numbers. In this case a book is kept in which the numbers are recorded with date, height, etc., but as a safeguard against loss of the book the records of date, etc., are also permanently fixed with the numbers.



LABELING TREES AND SHRUBS.

This label which we illustrate is easily made and inexpensive. A piece of thin sheet lead two and one-half inches square, with a piece of heavy galvanized iron wire eighteen inches long makes one label. A hole is punched in the lead through which the wire is put and then looped over it. This wire is inserted in the earth at the base of the tree and pushed in so far that the lead label is hidden an inch or so under the soil, thus putting it out of the sight of mischievous boys.

On this sheet lead is stamped with a die, first and at the top, and occupying a line by itself, the recorded number which identifies the tree. Then below comes F, '96 or S, '96, indicating the fall or spring of 1896; then h—7, d—2, signifying height seven feet, diameter two inches.

This label is almost indestructible. It is well to choose some side of the tree, say

the north side, and always place it there. This will save time when hunting for it. This system of labeling can be extended to trees and shrubs and even perennials. In case the two latter are in beds the labels should always be placed in front of the plant, and a memorandum should be made in the record book stating the rule you followed in placing them. Of course for shrubs and perennials the height and diameter is not required.

It is a good plan for those not entirely familiar with the new material they plant to have written labels on them and each time they pass a tree or shrub and cannot call it by name, step up and examine the label, and soon one will become familiar with the identification of all his belongings.

A thin copper sheet label made by the Cheshire Manufacturing Co., West Cheshire, Conn., where the name is written by a steel stylus is excellent.

W. C. EGAN.

VINES TO COVER DEAD TREES.

What vines would you plant if you wished to have them grow and cover dead oak trees about thirty feet in height? Who can I buy them of and how many should be planted for each tree? I want something that will cover the trunk and grow up and spread over the top.

Wisconsin.

J. W. F.

It is going to take a few years for almost any permanent hardy vine to reach a height of thirty feet and spread over the top. Special culture and a rich soil hasten growth, but often, just at the time a vine is well established and in good form at the top, the "dead oak" has become so rotten that a heavy storm topples it over. We would rather see a tree fifteen or twenty feet high well clothed with vine verdure than a taller one, naturally less covered on account of its extra height, requiring more age to the vine.

If the trees have but recently died and are sound in wood they may last long enough to produce the desired effect, and when decay approaches the vine may be taken down, laid away from the tree, the latter felled in the opposite direction and in its place an artificial support of gas pipe constructed.

Whatever vine is chosen ample feeding ground must be provided, for it must be remembered that all the soil now near the oaks has been exhausted of plant food by them. Choose a place near the trunk where the main roots leave the tree at wide enough angles to allow a hole fully three feet deep and as wide. This hole may be round, square or any shape as long as its width is equal to nine square feet. It need not be made right close up to the trunk, especially where the Virginia creeper is used, but can be placed if necessary two feet away—that is the nearest side to the tree may be two feet away, but in this case the soil between the tree and hole should be removed for six inches to a foot, and the vine carried from the hole along the bottom of this excavation to the tree. Fill this hole with good soil, made rich with well rotted manure, but unless the manure is very well rotted keep it more to the outer sides of the hole so the roots of the vine may not come in contact with it the first year. Newly planted trees or vines are like convalescing patients to whom over-rich food is dangerous.

If the hole of the tree is two feet or over in diameter, make a hole each side, if luxuriance of growth is desired.

What vine to use? All things considered we advise planting the Virginia

Creeper (*Ampelopsis quinquefolia*). It is perfectly hardy, transplants easily, clings to the tree if the bark is rough, and when established in good soil is a rapid grower. Its beautiful leaf-coloring in the fall is well known and admired. All nurserymen advertising in GARDENING have it. If you can obtain strong plants with the vines long enough so that when cut back the requisite length to compensate for root disturbance about 2½ to 3 feet remain; place the roots to a depth that the crown is fully one foot below the surface of the soil when filled in, the object being to place the roots where ample moisture can always be obtained, even without artificial watering. All plants will not stand this treatment, but this one, even if planted too deep, throws out roots from its buried stem. It may, however, be planted in the usual manner. Two plants to a hole will produce quicker effect and manure placed at the roots in the fall and lightly forked in in the spring will materially aid its after growth.

Should the trees be thin and the bark smooth, then this vine may require some training and tying up, and even on large trees winds sometimes blow loose a leader, in which case it is well to run a strong string around the tree or drive staples in and fasten to them.

For variety's sake the silk vine (*Periploca græca*) may be used on the shorter trees, but this needs help in attaching to the trees.

If you have any trees that you can head down to about eight to ten feet in height, and cut in to a head five or six feet in diameter, plant two strong plants of *Clematis paniculata* at their base, making same hole as above described and water freely in summer, cutting back to one foot in the fall and covering with ashes. You will in a few years have a sight worth seeing. Only the Virginia Creeper is to be planted deep, and have the vine itself covered by soil.

GLOSSY-LEAVED EVERGREENS FOR VIRGINIA.

I want to plant about thirty glossy-leaved evergreen shrubs this spring, and would be glad of some advice about them.

One reason for planting this place is to shut off, at least partly, a rough field on the east, from the front road, barn and shrubbery on the west, but I expect my real reason is simply a love of planting.

The evergreen euonymus, mahonia, all the hybrid teas (as far as I know them), and many tea roses are quite hardy here, none but the last ever requiring protection, and even the last will generally live without it.

The soil is red clay, with a bluish clay sub-soil, standing drought very well, and wet too, if properly sub-soiled.

M. N. Virginia.

There are a nice lot of broad-leaved evergreens with good foliage which would answer admirably for your purpose. Your situation will permit the planting of many things which could not be recommended much further north.

For setting where the tallest are required select from these: *Magnolia grandiflora*, English holly, American holly, *Ligustrum Japonicum* and *L. ovalifolium*. These ligustrums are privets, are very nearly evergreen, and are excellent for screening purposes.

For the next largest growers try *Photinia serrulata*, *Cephalotaxus Fortunei*, *Osmanthus ilicifolius*, *Ilex crenata*, *Cistus laurifolius*, *Enonymus latifolius*, the other broad leaved euonymus you mentioned and rhododendrons.



PRIMULA STELLATA.

The smallest sized ones will be *Skimmia Japonica*, *Aucuba Japonica*, *Prinos glaber*, *Yuccas*, *Mahonia Japonica* and *M. aquilifolia*, *kalmias*, *Buxus rotundifolia*, *Andromeda Japonica*, *A. floribunda* and *A. Catesbaei*.

Some notes on some of these trees and shrubs will be of use to you. All are believed to be quite hardy enough for your purpose, as they can be grown as far north as Philadelphia, some of them in partly sheltered situations.

Cephalotaxus is not a broad-leaved evergreen, but it is almost as good as one for your purpose, having deep-green foliage which keeps green all winter and a bushy habit of growth.

Cistus laurifolius has not glossy foliage, but it is a beautiful hardy broad-leaved evergreen and one almost unknown in our country. The leaves possess an aromatic odor.

Photinia serrulata has been placed on the list, as it has been claimed to be perfectly hardy much farther north than Washington. There are plants about Philadelphia which have stood perfectly in an open shed, with the thermometer showing but 10° above zero. It is well worth trying by you, as it is a lovely evergreen.

Should you plant the *Magnolia grandiflora*, the hollies, the mahonias and the *Prinos glaber*, your success will be greater if you first cut off all the foliage, unless the plants be pot grown. In fact, all of

the broad-leaved evergreens are the better for being treated in this way.

Should you plant *kalmias* and *rhododendrons*, add some sand and decayed leaf-mould to your soil to suit their fine roots.

JOS. MEEHAN.

The Greenhouse.

PRIMULA STELLATA.

Primula stellata (Star primula) is a new and distinct plant sent out by Sutton of England, differing in habit and appearance from all other primulas. In habit it has a graceful and light appearance, growing about nine inches high, the flower stalks about fifteen inches high, carrying hundreds of creamy white flowers three-fourths of an inch in diameter, in whorls or tiers one above the other all up the flower stalk. They last a long time in flower and for cut flowers they are very useful, lasting a long time in water. They are easy of culture, requiring the same treatment as the Chinese primroses, and are easily raised from seed which should be sown in March if large plants are wanted. They seem to like plenty of drainage and a good open soil to grow in.

The English gardening papers speak very highly of this plant and advise keeping over the plants a second year, as they give a great many more flowers and do

nicely in this way. We shall keep a few of ours over and see how they behave with us. No doubt this new primula will become quite popular when better known as it is one of the freest and most graceful flowering primulas there is.

Mahwah, N. J.

DAVID FRASER.

TECOMA SMITHII—SOLANUM WENDLANDI.

"T. W. B." writes: "*Tecoma Smithii* was recommended to us for chrysanthemum treatment and to succeed them, but it has not bloomed yet. We have it in a large 4 inch pot." A large 4 inch is rather indefinite; possibly it is 5-inch, but that does not matter; that is not the treatment, neither can it be called a plant to succeed the chrysanthemum, as it is an utterly different plant. It is a greenhouse climber, will do well in a temperature of 50° and should be planted out where it can remain permanently for years. If you cannot give it a permanent border in the greenhouse the next best would be a large tub.

The same subscriber writes that a plant of "*Solanum Wendlandi*" set in the open ground last spring grew to the height of 20 feet, a remarkable growth. It was taken up in the fall, some of its large fleshy roots cut off and potted. It dropped its leaves; new leaves have since been formed, but with all that it has an unhappy look. Don't get discouraged; keep it rather dry and it need not have the best of place in the greenhouse. Plant out again after danger of frost and you will no doubt be rewarded by a fine lot of flowers. When planting out cut back to within two feet of the roots.

WM. SCOTT.

SOWING SEEDS—GERANIUMS.

Please give me information on below subjects:

1. When shall I sow seeds of cinerarias, primroses, calceolarias, gloxinias and cyclamens?

2. I have a couple of cinerarias now in bud. Should these early buds be pinched off or allowed to grow? Although well supplied with water, the leaves wilt badly in a cool greenhouse. What is the cause?

3. Please give me the names of about a dozen best winter-blooming geraniums, old or new, single or double. E. O. N. Tennessee.

1. Cinerarias, if wanted in bloom by the following Christmas, should be sown in May, but they are difficult to manage during the hot months and are not a great acquisition in midwinter, so I would not advise them sown until late in August; then as they grow the season is more favorable to their main requirement, which is a low temperature at all times, but not one degree of frost. June is a good month in which to sow primroses, and they will then flower in December. Calceolarias should be sown in August. Like the cineraria, it is difficult to grow in the heat of summer. Gloxinias can be sown at once. You will not get a large plant the first year. The florists who raise a quantity of these beautiful plants to have the one year old bulbs for sale, plant out the little plants in a frame in rich light soil, covering at first with glass and afterwards with some light cotton cloth for shade. They will mostly all flower and you can pick out the fine ones and discard the poorer. The bulbs will make fine plants for pots the following year. Cyclamens should have been sown in October, and then you could have fine plants in December and January. You can still sow cyclamens and may expect good plants in bloom a year hence.

2. No, don't pinch off any buds from the cinerarias; they never need any pinching or disbudding. If they are throwing up a spindling flower shoot they are either in need of more root room or you have them in too warm a house; 45° at night is plenty high enough, and if it is higher than that outside then give plenty of ventilation. On bright warm days the leaves of the cineraria will wilt if the roots are dry, but they will revive when watered. If you are sure your plants were wet at the roots and still wilted it is a bad sign and you have more than likely overwatered. The cineraria is easily killed by overwatering. That is why the soil should be rather rough in texture, and the drainage of the pot perfect, so the water will pass freely through the soil.

3. Six good double geraniums for winter flowering are: F. S. Raspail, scarlet; Emile de Girardin, pink; La Favorite, pink; Ernest Lauth, amaranth; W. P. Simmons, crimson; Beaute Poitevine, salmon. Six singles that will be found free bloomers are: Athlete, scarlet, fine; Daybreak, flesh; Marguerite de Layre; William Kelway, scarlet, intense; Princess of Wales, pink; Comtesse de Cornulier, white and rose. WILLIAM SCOTT.

GREENHOUSE NOTES.

There is still time to sow seeds of a few begonias for bedding purposes. The well known Begonia Vernon (*B. semperflorens coccinea*) and its dwarf form are very effective when massed and should be classed among our best bedders. *B. Erfordiae* is another pretty variety which is easily propagated either by seeds or cuttings and does equally well in either shade or open sunshine, which makes it very useful.

As soon as the seedlings are large enough to handle plant them out a suitable distance apart in shallow boxes of soil. Often this must be done before the little plants are large enough to handle conveniently with the fingers, and it can then be done with a pair of wooden pincers made for the purpose. This transplanting or "pricking out," as it is called by the gardeners, is to give the individual seedlings an opportunity to secure proper light and nourishment. If allowed to remain too long in the crowded seed patches they are apt to become spindling and weak. These little seedling plants require most careful attention in their very young state.

Water lily seedlings are very apt to float away from the seed pans. A light covering of coarse sand will prevent this.

For chrysanthemum cuttings always choose the best and strongest shoots, and this advice will apply to all kinds of cuttings. It is poor policy to put the chrysanthemums under the benches after they are through blooming and then propagate from the sickly shoots produced in that situation. If you have been so unwise as to treat your chrysanthemums as indicated it will be better to throw them out and buy healthy plants.

Set aside your best plants of cinerarias and primulas for the production of seed if you wish to perpetuate the strains you now have. Old plants carried over do not give so good flowers as those raised from seed every year. For the proper ripening of the seed a dry and sunny position is required.

Forget-me-nots are very effective used as an edge for a bench filled with bulbous flowering plants.

Xanthoceras sorbitolia forces well, is very attractive and helps to decorate our greenhouses at this time of the year.

In cactuses *Epiphyllum truncatum* is

past its best but *E. Gaertnerii* will soon take its place on the show bench. Better results will be had from *E. Gaertnerii* by grafting it on *Cereus grandiflorus* and *E. truncatum* should be grafted on the pereskia stock. If grafted in April they will bloom the following year.

JAMES JENSEN.

WISTARIA—DOLICHOS JAPONICUS.

Would a wistaria be a good plant to grow in a tub in a conservatory? And would it have to be wintered in a warm sitting room or would a frost-proof cellar do? Our winters are too severe here to think of leaving it out. What variety would you advise me to grow in that way and when do they flower?

Do you know anything of a creeper advertised by some seedsmen as *Dolichos japonicus* and claimed to be a hardy quick-growing vine?

Manitoba.

L. O. PATERSON.

It is doubtless much too cold for wistaria in Manitoba unless well protected. If your conservatory is large and you have not much to put in it the wistaria would make a good summer occupant, although there are many plants more worthy of the place. After November it could be wintered in a light cold cellar perfectly well or in a cold shed. The greatest trouble would be that either the cellar or shed would be often warm and in early spring would start a growth. If so remove to the greenhouse, not outside where a late frost would kill the young growth and ruin it for that year. There are only five or six species of wistaria and *chinensis* is the best. The flowering season of *chinensis* out of doors extends over June, July and August; more properly there is a second crop of flowers in August.

Dolichos japonicus is a pea-flowering woody, perennial climber, but not hardy, at least not north of Washington, D. C. It would make a very satisfactory climber planted in a conservatory where the winter temperature was from 45° to 55°.

WM. SCOTT.

SOWING SEEDS.

February is a good month in which to sow a great many seeds. Some of them are slow growers, such as the tuberous begonias and gloxinias, and if these are wanted for this summer's decoration the sooner they are in the better.

A number of annuals for the flower garden that may be sown now are *Begonia Vernon*, lobelia, pansies, vincas, verbenas, antirrhinums, Marguerite carnations, *Centaurea candidissima* and *C. gymnocarpa*, lavender, etc.

Among the hardy perennials and biennials that will flower the first year if sown early are the delphiniums, *Alyssum saxatile*, geum, gaillardias, pyrethrums, *Lychnis Haageana*, *Lobelia cardinalis*, *Papaver nudicaule*, platycodons, lythrum, arabis, *Eurothera Lamarckiana*, and many others. DAVID FRASER.

STAG'S HORN FERNS.

The platyceriums or Stag's Horn ferns form one of the most distinct and interesting groups that are found in all the vast fern tribe, and are certainly worthy of more extended recognition than they have thus far received. Some of them will stand considerable exposure without much injury, and they are all admirable for greenhouse decoration, providing the conditions are such as would be favorable for fern growth.

The members of this genus are epiphytal in habit, and for this reason are most happy when grown either on a section of a tree fern stem or block of wood or in a basket, though this treatment is not absolutely essential for all, as some of the species can also be satisfactorily grown in pots. But in either case the potting material must be of an open, easily drained character, the best soil being rough, fibrous peat, or peat and sphagnum, and as such soil soon dries out frequent waterings will be found necessary. In order to keep the foliage in good condition it is best to keep the water off the leaves as much as possible, especially in the winter, as at the latter season these may soon be discolored.

The propagation of the platyceriums is not a very rapid process, and depends on two methods, viz.: either by means of seeds or spores, or by the production of young plants or suckers from the roots, the latter practice being common to most of the species, and the young plants so produced being readily separated from the parent plant after they have made one or two fronds. If spores are resorted to they should be sown as soon as possible after they are gathered, using a coarse compost of peat and sand on which to sow them, and keeping them moderately close until they show signs of germination, after which they need rather careful watching in order to prevent them from damping off.

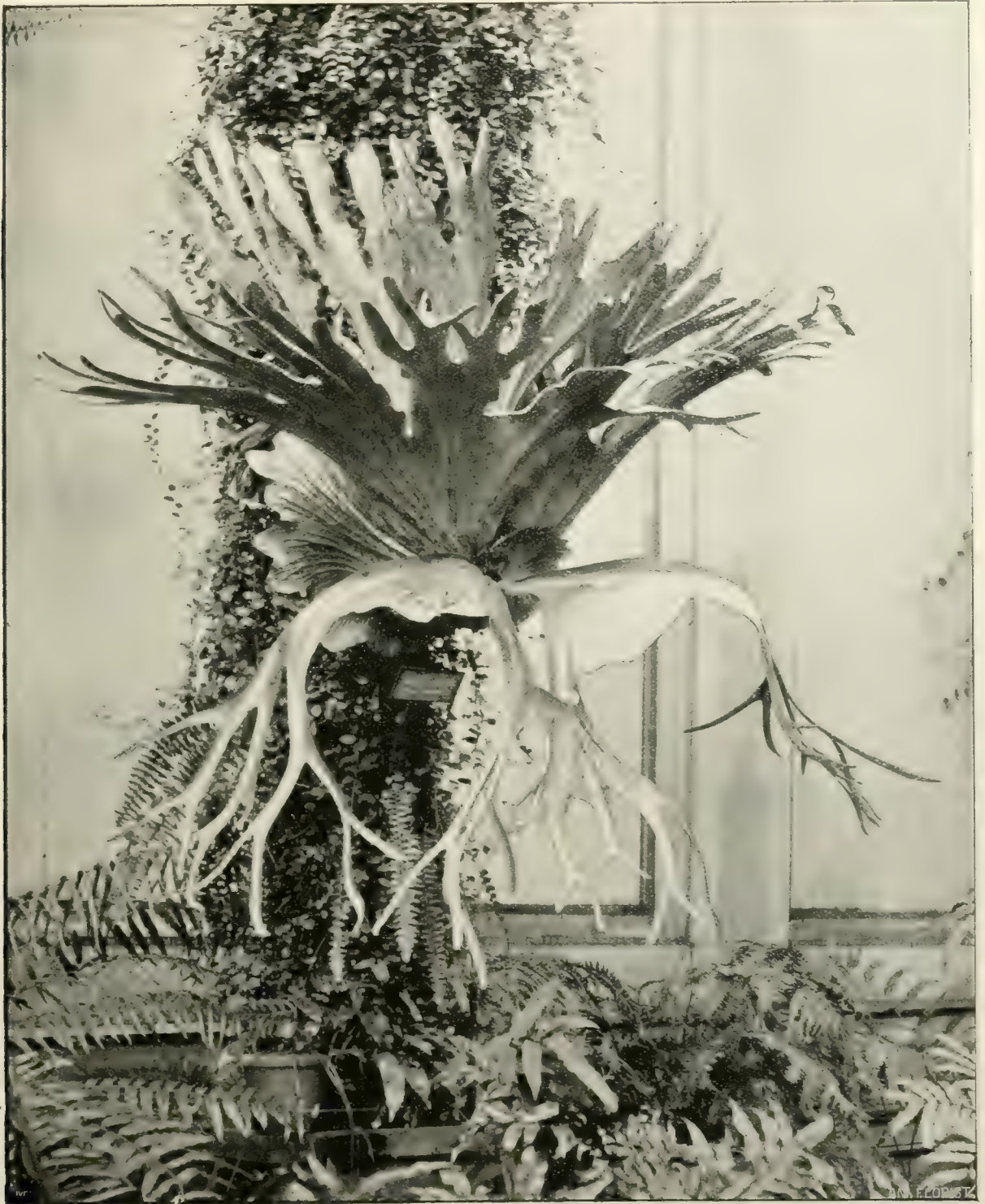
The spores of these plants are somewhat slow in germinating at best, and it seems a rather uncertain operation too, but the only safe plan is to give them a fair chance and not to empty out the seed pots in disgust within six months after sowing.

The first species in cultivation and doubtless the most widely known is *P. alciorne*, the common Stag's Horn fern, which was introduced from Australia about the beginning of the present century. In common with the other members of the genus this plant has fronds of two very different types, the barren ones being more or less flat and shield-like, while the fertile leaves are upright in habit and deeply cut into such long, narrow lobes as to clearly indicate the reason for its ordinary name, the ends of these lobes drooping over in a very graceful manner. This is probably the most hardy member of the genus, and can be readily grown in a night temperature of 50 degrees.

A considerable improvement on the above as a specimen plant was sent out some years ago in the form known as *P. alciorne major*, this being of much stronger growth and more upright than the type. The fronds of this variety are of thick leathery texture, and very dark green in color, giving the plant a very attractive appearance and making it also one of the best exhibition ferns in cultivation.

Probably the most noted species is the one of which an excellent illustration appears in the present issue, *P. grande*, the specimen shown being a well-known example at Horticultural Hall, Fairmount Park, Philadelphia, from a photograph taken some time ago.

The barren fronds of *P. grande* are very large and almost erect, and are deeply cut into spreading divisions, while the fertile ones are thrown out at almost a right angle to the first, being from three to six feet in length in a large plant, and are deeply divided into long pendent segments. The spores of *P. grande* are produced in a large irregular patch at the base of the segments noted above, and in genera



SPECIMEN PLANT OF PLATYCERIUM GRANDE. (STAG'S HORN FERN)

appearance bear some resemblance to a patch of brown fungus on the under side of the frond. I have never seen this species produce any young plants from the roots, but have raised it from spores though experiencing some little difficulty with the young plants when they were first potted off, from their susceptibility to "damping" at that stage.

Another remarkably handsome species is *P. Willinckii*, a warm house plant from Java. This is of smaller growth than the preceding, the barren fronds being erect, rounded at the base and cut into lobes. These fronds are somewhat ephemeral in

character, or rather in substance, and seem soon to have fulfilled their office, as they turn brown and dry in a short time after they are developed, whereas the fertile ones will endure for a year or more. The latter are produced in threes, attaining a length of three feet or more, are drooping in habit and several times forked into perhaps the most perfect representation of a stag's horn that is to be found in the vegetable kingdom, while the color is grayish white, this being caused by the fronds being closely covered with whitish scales.

Other fine species are *P. Hillii* and *P.*

æthiopicum, both of which are strong growers and remarkably handsome, but possibly not quite so readily procured as those mentioned above. W. H. T.

MONS. J. BUGNOT, the famous French pansy grower, in a private letter to Mr. J. C. Vaughan, the seedsman, writes that he has given up his business as optician and will hereafter devote his entire time and study to the improvement of the pansy.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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We have received a copy of the printed proceedings of the tenth annual convention of the Association of American Cemetery Superintendents, which was held in St. Louis, September 15 to 17 last. The pamphlet contains the various essays read at the convention, together with the very full discussions, which are of much practical value. The officers for the current year are: President, Geo. W. Creesy, Salem, Mass.; Vice-president, Arthur W. Hobart, Minneapolis, Minn.; secretary and treasurer, Frank Eurich, Auburn-dale, O.

The English use, and it is claimed with success, chemical weed-killers for the extermination of plantains and similar large weeds on the lawn. The implement used is described as follows: One consists of a steel cutting plate at the end of a tubular shaft or handle, the handle being filled with a weed-killer solution. The cutting plate severs the root, and by a mechanical action a small portion of the poison flows from the tubular handle on to the root. The root is cut and poisoned at the same time. There is another tubular form that may be used as a walking stick also, by which the plant is "stabbed" and the poison injected at the same time.

An English firm is offering through Mr. J. W. Elliott a creamy white hybrid delphinium at five dollars and fifty cents a single plant. That is certainly a high price for a novelty, and if it is worth the money it must be something very good.

IT IS WELL KNOWN that the proper function of the leaves of trees is to expose to the action of the light the rising sap that it may imbibe carbonic acid from the atmosphere and combine it with the oxygen and hydrogen it contains and thus prepare the cambium, which when hardened, forms the new wood. It is necessary to obtain the largest sun exposed surface possible and no method could have been employed that would have produced the desired result so thoroughly as the myriad of thin flat surfaces the leafage affords. Professor Gray says that the Washington Elm at Cambridge was estimated to bear seven million leaves, exposing a surface of two hundred thousand square feet, or about five acres of foliage.

IN A WOODS not far from Chicago, where the land had been sub-divided back in the booming times of 1873, and roads laid out and graded, but afterwards allowed to grow up wild, numerous young hawthorns have sprung up. The roaming cattle have in many instances trimmed these into compact symmetrical forms, by constant browsing upon the fresh, tender terminal shoots. Some are so nicely formed that no one would suppose the bovines had eaten to a purpose. This is but history repeating itself for it is said that the beauty and vigor of some plants on which the goats had browsed, gave to the ancients the idea of pruning shrubs into form. Be this as it may, we do not advise turning either goats or cattle into our shrubberies for topiary experiments.

SWEET PEAS UP TO DATE is the title of a neat 70 page paper bound booklet by the Rev. W. T. Hutchins, issued by W. Atlee Burpee & Co., Philadelphia; price 10 cents. It contains the latest rules for culture, remarks about early planting, quantity of seed, the cut worm, bushing and trellising (with illustrations of six different methods of trellising), planting (three illustrations), watering, the latest pests, and a complete catalogue of sweet peas for 1897 (with 14 illustrations), a portrait of Henry Eckford and description of a visit to Mr. Eckford's place by the author, a portrait of the author with an account of the manner in which he became interested in sweet peas, and a comparison of varieties by the publishers. It is a very useful and interesting little book, well worth the modest price asked.

THE AMERICAN FRUIT CULTURIST, by John J. Thomas. We have just received a copy of the twentieth edition, revised and enlarged by Wm. H. S. Wood. This comprehensive volume of some seven hundred and fifty pages devoted entirely to the growth, culture and improvement of edible fruits commends itself not only to the market grower, to whom it is almost indispensable, but to all intelligent amateurs, who desire to know and understand the why and wherefore of the essential points in the successful production of garden fruits. The opening chapter, "Principles of the growth of trees," is concisely written, more upon popular lines than scientific ones, thus laying plainly before the ordinary reader proven facts that dispel all mysteries supposed to enshroud the growth and development of plant life. In other chapters we are

told how new varieties are produced by cross-fertilization and the process fully explained. Propagation by budding, grafting, etc., is clearly demonstrated, as well as the proper method of pruning. All known garden fruits are thoroughly discussed and their best mode of culture given. Published by Wm. Wood & Co., New York. Price \$2.50.

CATALOGUES RECEIVED.

W. Atlee Burpee & Co., Philadelphia, seeds, plants and bulbs; Peter Henderson & Co., New York, seeds, plants, bulbs, tools and fertilizers; W. T. Hutchins, Indian Orchard, Mass., sweet peas; Storrs & Harrison Co., Painesville, O., seeds, plants, bulbs and nursery stock; Weeber & Don, New York, seeds, plants, tools and horticultural sundries; W. A. Manda, S. Orange, N. J., plants, seeds and bulbs; Green's Nursery Co., Rochester, N. Y., miscellaneous nursery stock; Cole's Seed Store, Pella, Ia., seeds, bulbs and implements; Pitcher & Manda, Short Hills, N. J., seeds, plants and bulbs; Silas Wilson Co., Atlantic, Ia., new and standard fruits; H. H. Groff, Simcoe, Ontario, Canada, cannas, gladiolus and clivias; Nathan Smith & Son, Adrian, Mich., new and standard chrysanthemums; Schlegel & Fottler, Boston, seeds, plants and bulbs; Wm. G. McTear, Princeton, N. J., trade list of chrysanthemums; Gould's Mfg. Co., Seneca Falls, N. Y., pumps and hydraulic machinery; Field Force Pump Co., Lockport, N. Y., spraying pumps, nozzles; R. & J. Farquhar & Co., Boston, Mass., seeds, plants, bulbs, fertilizers and tools; Reasoner Bros., Oneco, Fla., plants and nursery stock; W. N. Scarff, New Carlisle, O., seeds, plants and fruits; John C. Moninger Co., Chicago, greenhouse construction lumber; E. J. Hull, Ollyphant, Pa., plants and fruits; Johnson & Stokes, Philadelphia, seeds and plants; Vaughan's Seed Store, Chicago, seeds, plants, bulbs, small fruits, implements, etc.

ANTOINE CROZY.

The accompanying engraving is from a snap shot photograph of M. Antoine Crozy, the celebrated canna hybridizer of Lyons, France. The variety Mme. Crozy, still a standard sort, and the host of other cannas of the large-flowering type originated by him, have made his name familiar to every lover of flowers in America, and we believe our readers will be much interested in this view of the great canna specialist as he appears in his working garb.

Hot Beds.

MAKING A HOTBED.

G. A. Chicago, wants to know when and how to make a hotbed. We can do no better than to reprint an article on the subject from our issue of Feb. 1, 1895, that covers the subject quite fully. The article follows.

There is nothing new to tell about how to make a hotbed, the same story is told and retold year after year, and we have got to tell it afresh every spring. Hotbeds can be worked to advantage all through the winter in the south; in the north, however, we don't care to start them before February, and then for vegetables only; March is soon enough for our flower seeds. The trouble with the hotbed in midwinter is properly attending it in inclement and stormy weather. But

we can get the heating material ready, the loam under cover, and the box or pit or the frame ready.

At this time of the year a hotbed should be in a well sheltered, sunny spot sloping to or facing the south; and the ground should be well drained both at the bottom of the pit and from the surface. The pit for the manure should be two or two and one-half feet deep below the ground, and



ANTOINE CROZY.

the frame or box above the surface level should be one foot high in front and eighteen inches or over at back, and banked around with loam or coal ashes. If the pit is lined to the bottom with boards the manure won't cool so soon as it would did it come against the earth bank, and it would keep warm still longer if the lining of the pit were double with an open air space between the two boardings. To have a good job the top boxing or frame should be of pine plank, and bevelled on the edge just enough to let the sashes lie perfectly flat on it.

The heating material should be good fresh horse stable manure, thoroughly moistened and heated. Throw it up into a heap to heat, then turn it over, shaking it loose and mix it up well so that all is equally moist and rough, and when it gets quite hot make up your bed with it, shaking it equally and evenly all over, and tread it down firmly, especially around the sides of the frames and under the rafters, if the rafters are not moveable. The end of this shaking out the manure evenly and treading it all down equally may not appear very evident at first, but a month hence when the manure begins to settle there will be puckers and settlements in the bed where the manure was not trodden down evenly. In making a hotbed never use manure that isn't quite hot before it is made up; if it is cold or cool, no matter how new it is, when filled into the pit and packed the chances are it will not heat up at all or if it will, it will do so only slightly. If you are forced to use the manure before it is quite hot shake

it loosely and evenly and pack it down only a little, fill the frame up full and don't pack it at the top at all, then put on the sashes and keep them close till the sun helps to start a heat in the manure. When you get up a good heat in this way tread all firmly and evenly and put on the loam. After the heat is well up the manure should stand about nine or twelve inches from the top of the frame, according to whether you are going to sow seeds or plant lettuces, and there should be a layer of four or five inches of loam over the manure.

After the loam is put on keep the sashes closed till the sunshine above and the hot manure beneath warm up the loam. When the heat of the loam falls to 110° you can sow seeds of lettuces, carrots, radishes or spinach; but wait till it falls to 100° before you plant out lettuces. The heat when on the decline drops to 75° or 80° quite fast.

In hotbeds there is apt to be a steam for the first few days, let this escape by ventilating a little. Indeed, when a bed is new and the loam covering over the manure is thin there is so much "steam" that we tilt up every second sash at the back about a fourth of an inch, even over night, covering the aperture over with a straw mat or some sedge.

And we must protect the plants in the beds from cold weather by covering over the sashes with straw mats, sedge, shutters or other means. In the case of cold frames we can let them remain covered up in stormy weather for days or weeks at a time without injury, but not so with hotbeds, the close warm atmosphere and steam would soon rot off the growing plants were the frames shut up and covered over for a few days at a time.

The Fruit Garden.

PRUNING GRAPE VINES.

The pruning of grape vines may be proceeded with at any time after the leaves fall. There is no need to delay the work until toward spring, as so many do; and how much nicer a trellis looks after the vines are pruned and tied than it does with the canes hanging about as they grew.

To prune a grape properly it must be borne in mind that, like all other vines, it is apt to become bare of shoots at the base. It aspires to get out of reach, which is what an owner of a vine seldom requires. Sometimes in spite of the attempts to keep it well supplied from bottom to top with young canes there will be too much top growth at the expense of the bottom, in which case there must be a cutting back of one or more of the old canes, that new ones may arise from the ground. All systems of pruning must have for a basis the providing of young canes over the whole surface to be covered.

Of the two plans mostly followed, one aims to provide new canes from the ground every year. When the vine is planted it is so pruned that three or four good canes are produced. Every year the half of the number are cut down to near the ground that new ones may spring forth when the season comes. Those not cut back are the ones which will give the fruit. But even these are often the better for being shortened in. A long cane will give a great number of bunches. When shortened, though the number is lessened the weight of the crop is not, as additional nourishment finds its way to the bunches produced. [See page 172]

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I offer 6 extra large specimens of *Latania borbonica*, also 18 plants of same in 16 and 18-inch pots, at a very low rate, as I must have the room they take. This is a splendid opportunity to get some fine conservatory specimens at very low prices.

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FRED. W. KELSEY, 145 Broadway, N. Y.

What is known to gardeners as the spur system of pruning grapes is very satisfactory, and is followed by a great many persons. An annual renewal of canes is not looked for. The little side shoots, or canes, which have been produced from older canes, are looked to for the fruit. These shoots are cut back to almost their base, leaving only about two eyes on the canes of the previous year. As these eyes push into growth each one will give one or two good bunches of grapes. In this way an old cane when well furnished with side shoots will present a beautiful sight when the fruit is ripe, as the bunches will be so evenly distributed.

A word now in regard to summer pruning will not be amiss. As the young shoots of the grape develop, the flower bunches appear and fruit is formed. The growth of the shoots continues, however, and many persons miss it, I am sure, by permitting this to be. The bunches are very much finer if the shoots are nipped off at the second leaf above the bunch as experience tells me. When the growth is stopped in this way, little shoots will push out from the points again, and these also must be topped as fast as they appear. Not only is it an advantage to the fruit to have this pinching off practiced; young canes not fruiting are the better for being kept topped after reaching the length required. If an eight feet length is what is required, keep it to eight feet by nipping the points of the growing shoots, and when fall comes there will be a much sturdier cane than there would have been had the growth been unchecked.

Outdoor vineyards of native grapes are grown under this system in cases that have come under my observation, and foreign grapes under glass and those out of doors in California likewise.

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35 pkts.), and give **FREE** as a premium one full-size packet each of **CUPID** and **AURORA**,—provided, it is stated where this offer was seen. Please try to get up a club of **Five** for One Dollar.

With every collection we enclose a copy of "How to Grow High-Grade Sweet Peas by the Hamilton Method." Tells plainly just how to succeed in growing to full perfection the finest High-Grade Sweet Peas,—such as are contained in this unequalled collection.

Florists and agents who wish to make a business of selling these collections will be supplied at the rate of **\$2.00 per dozen collections**, by mail, postpaid, but without the premium packets. We have prepared this collection to extend our trade and still further increase the popularity of **SWEET PEAS,—the people's flower**. The price is too low to yield us any direct profit, and whether one dozen or one hundred dozen are ordered, we cannot send the collections, by mail, postpaid, for less than \$2.00 per dozen. By express the price is \$1.80 per dozen, or \$15.00 per hundred collections. It would be easy work to "make money and do good" by selling these collections. We will supply **Lithographed Leaflets**, showing these Sweet Peas painted from Nature, free of charge to those who order one dozen collections or more.

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SCIENCE FOR ITS OWN SAKE.

Last July I had the pleasure of visiting and inspecting Fordhook Farm, near Doylestown, Pa., the large seed testing grounds of Messrs. W. Atlee Burpee & Co., of Philadelphia, Pa., the moving spirit of which is the head, Mr. W. Atlee Burpee.

No one who has not visited Fordhook can form any conception of the magnitude of the operations carried on there, nor properly appreciate the fact that became at once apparent to me, that the motive that kept up this large experimental farm was purely "science for its own sake." To one who for the first time surveys the broad and lovely expanse of land that is given up to purely altruistic work, there comes this quickening doubt: "Why?" One hundred and twenty acres of Pennsylvania's most fertile and genial soil devoted to a work that returns almost nothing of a cash value for the vast outlay yearly of men, money and materials, not to count the expenditure of the personal attention which Mr. Burpee gives to it.

One can be pardoned for this one doubt, for where else can one find similar work being done under similar conditions? Other seedsmen have stretches of grounds upon which trials are conducted, but the trials are the minor part, the production of marketable seeds being the principal work carried on, and "trials" being only an incident. It is not so at Fordhook. The amount of marketable seeds grown there is very small; so small that I was greatly astonished at the amount when the figures were given to me by Mr. Darlington, the general manager, in comparing them with the total amount handled yearly by the firm.

If one were to ask Mr. Burpee the motive governing him in all this he would no doubt reply that to be certain the seeds will grow we must test all of them before marketing them. But while this is no doubt the exoteric reason, the real reason, as it appears to an unprejudiced observer, is an innate love of investigation and scientific research that is happily wedded to an allied business venture, the success of one depending closely on the diligence with which the other is pursued.

The principal results have been the improvement of varieties of vegetables and flowers, the introduction of new ones and the carrying on through years of tests for different fertilizers for different soils, and the proper forage and food plants for each section of the country. The results gained in these lines have far outstripped those gained by the Government Agricultural Department. Whether Mr. Burpee is one cent the gainer for the work carried on at Fordhook is much to be doubted, but that the farmer, gardener and florist are cannot be controverted. The science of hybridization owes more than is known to the extensive operations in that line carried on at Fordhook. I do not think any establishment in this country can show as many successful tests made as the records here show.

It is with the feeling that such work should be recognized by the horticultural and agricultural world in the same spirit with which Mr. Burpee carries it on that these lines are written.

Roaring Spring, Pa. S. A. HAMILTON.

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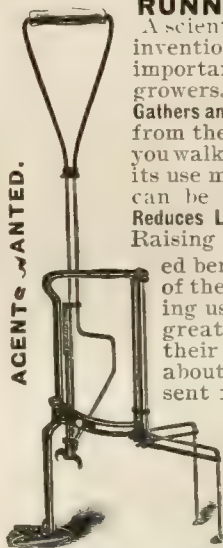
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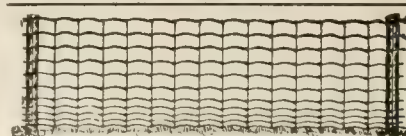
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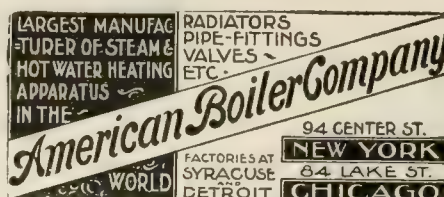
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GARDENING

Vol. V.

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CHICAGO, MARCH 1, 1897.

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No. 108.



PHILADELPHUS LEMOINEI AVALANCHE.

Trees and Shrubs.

PHILADELPHUS LEMOINEI AVALANCHE.

The generic term philadelphus, given to the mock-orange, signifies as we all know brotherly love. A rather peculiar feature connected with this shrub has been noted once before in GARDENING, namely that the people have chosen the generic name of the lilac (*Syringa*) for a common one of the philadelphus.

This shrub has native representatives of the family in central Europe, Japan, the Himalayan mountains and North America. *P. coronarius*, from Southern Europe, is the most common form cultivated, whose sweet orange-scented flowers first suggested the name mock-orange. All are of easy culture and hardy.

They flower on the ripened wood of the previous season's growth, therefore the proper time to prune them is immediately after blooming. This induces vigorous shoots, which if well ripened, furnish the next season's flowers. There are several old varieties handled by the nurserymen, all of which are good. In the way of a golden leaved shrub, the yellow leaved form of *P. coronarius* is quite effective.

Of late years Messrs. V. Lemoine & Son, Nancy, France, have been hybridizing the various species with success and introducing them to the public, one of which is the subject of our illustration. It requires no facile pen to extoll its beauties as an isolated shrub upon the lawn as the camera has caught its charms in a most fascinating manner. It is described as follows: "The branches are two metres (over six feet) long, gracefully curving with the weight of the flowers,

which are white and in masses on short laterals, as large as those of *P. coronarius* and of a sweet odor." Its catalogue price is six francs.

MOVING LARGE HAWTHORNS.

Within the last few years quite a number of fair sized hawthorns have been removed from the woods to the private grounds of residents along the lake shore north of Chicago. During the early fall when they are in berry the would-be owner goes into the open woods and selects his tree, choosing those that suit his fancy either in the vivid color of its fruit or in the symmetry of its branches.

Early in December men dig a trench some three feet wide and the same in depth all around the trunk, leaving a ball of earth fully eight feet in diameter. The earth is thrown out of this trench,

and the tree left alone until this ball of earth freezes enough to hold together when moved. If it snows or rains, or the tree is in a low spot, a man watches it and keeps the trench free of water. When the ball is well frozen a four horse team a gang of men go there and with timbers and jack-screws the tree is placed upon a low wagon and hauled to its destination.

In the meantime a hole three feet deep and ten to twelve in diameter has been made for it and nearly filled with good soil and then heavily covered with manure to keep it from freezing. In this hole the tree is planted, and if any roots had gone outside the ball obtained they are smoothly cut, and the head cut in a little. This consists in removing any branches that may be spared, right back to the trunk, but those generally cut are the laterals issuing from the main branches that diverge from the trunk.

Moved carefully in this manner, they have been quite successful and many have obtained beautiful specimens. It is expensive work, however, costing from twenty-five to seventy-five dollars a tree.

WISTARIAS.

The wistaria is one of the most useful of vines, its beauty when in flower in early spring causing it to be much planted. It was, evidently, a favorite with the early settlers of Philadelphia as old vines of the *W. chinensis* of monstrous size, are often met with. If I mistake not Dr. Caspar Wistar, after whom the genus was named by Nuttall, was a born Philadelphian.

For a long time but two sorts, our native one, *frutescens*, and the Chinese *chinensis*, were the only ones known. But now there are white flowered and double flowered varieties of these two, as well as a supposed hybrid sort, *magnifica* and a Japanese one, *multijuga*, and a white variety of it. These are all fairly well known in cultivation now, and I think most every one will agree with me that first and foremost of all yet, is our old friend the Chinese. I think it decidedly the most showy of all.

A great deal has been said in praise of *multijuga*, the Japanese one, because of its length of raceme of flowers. It is true this raceme is often three feet in length, but then there are no more flowers on it than there are on the one foot raceme of the Chinese. In fact, they are so scattered that nothing like the display of the Chinese is made. It may be that the flowers are not a lighter color than those of the Chinese, and that it is their scattered condition which creates the impression, but they seem to be so.

The white flowered Chinese makes a beautiful display when in bloom, and this and the double variety of the common one make a good addition to a collection. When this wistaria—the Chinese—is given room to grow there seems no limit to its progress. There are plants of it here which have been planted alongside of Norway spruce trees and which have ascended 60 feet, to the top of the trees, and have envired the branches. In the summer of 1895, at Hampton Court Palace, London, I saw one which had a trunk 20 inches in diameter and branches 8 inches, and which covered all the wall allowed it, to which it was trained, which was about 100 feet in length by 25 in height. Besides its usefulness as a vine, if planted on the lawn and tied to a stake which will support it for two or three years, a dwarf, tree-like specimen results which when in bloom is one of the loveliest sights imaginable.

While I think many will agree with me

in giving first place to the Chinese they will be with me, I am sure, in saying our native one, *frutescens*, is a splendid sort. In the first place it is a real vine, running rapidly over whatever is given it to cover. A strong vine will make long, rope-like shoots of 25 feet in length in a season. Its racemes of flowers are not nearly as long as those of the Chinese, but they are full of flowers, which are produced in great abundance, and they appear two weeks later than the Chinese, and are of light purple color. There is a white and a double variety of it in cultivation.

Another beautiful and valuable sort is one called *magnifica*. While said to be a hybrid between *chinensis* and *frutescens*, it displays close affinity to the latter, with no perceptible resemblance to the former. It was introduced from Germany by a Philadelphia party many years ago. The racemes are rather larger than those of *frutescens*, and the flowers of rather lighter color. A more floriferous vine it would be hard to conceive. It flowers at the same time as *frutescens*, and in my opinion it is the better of the two. A curious feature in connection with it is that it produces seeds abundantly while the *frutescens* rarely indeed has any in these parts, though bearing them freely enough in its wild state, as I am told.

Philadelphia. JOSEPH MEEHAN.

HYPERICUM MOSERIANUM.

This French hybrid hypericum was justly much admired in the exhibit of Mons. Moser at the World's Fair, and has since then been distributed quite freely.

It is to be regretted that it is not perfectly hardy in all sections of our country, but as it moves easily and can be kept dormant in cellars and cold frames, all can grow it. This treatment naturally disturbs its growing activity some, and retards its time of bloom, but even then it produces its lovely pure yellow flowers so freely and continuously that all fall in love with it. The numerous stamens standing well above the petals and generally in the form of a rather close band around the center, suggests the glistening texture of silk floss. It is quite dwarf in stature and does well in partial shade.

Hypericum aureum, from the mountains of Tennessee, is hardy at Chicago without protection and produces similar looking flowers, but smaller and less continuously. The picture does not do justice to the subject.

THE SUCCESSFUL TRANSPLANTING OF THE OAK.

It is a pleasure to note the increased desire to plant the oak. There are many old grounds on which not an oak tree is to be found, save in cases where native ones existed and were spared when the grounds were laid out. But this is not the case to-day. Such educators as GARDENING and the many prominent landscape gardeners have taught the public how valuable the many species of oak are, and on grounds recently laid out this tree finds a prominent place.

It is, therefore, timely to say to those about to plant it that to succeed with it, it must be closely pruned when planted. There are some sorts easier to plant than others, but on the whole but few trees demand such a close pruning as it does. In parks and public grounds where what is known as a nursery exists, small plants of from two to three feet are often set out closely, to remain there until of a suitable size to set out in permanent positions. Plants of this size, planted with care, will not require pruning. But of sizes above

this, pruning should be performed, increasing in extent as the trees do in size. Should it be seedlings transplanted for the first time, the work may be safely done if the pruning be severe and the plants not over about five feet. By severe pruning is meant the trimming off of all side twigs, leaving but the main stem. Let me mention here that the central shoot should not be cut away. Oaks are slow in forming a new leader, and often remain in a dwarf state for some time after being so improperly cut.

When oaks have been twice or more transplanted, as they should have been, it is feasible to transplant those of eight to ten feet, but for my own self I would prefer a five to six foot tree to any other. Such a tree, closely pruned is pretty sure to live, and it is not too old or too large to be brought into good shape should it not already be. An oak tree, well proportioned of about six feet, will have side branches of four feet in length. These should be cut back to two feet. Larger trees should lose a greater proportion of branches. But it should be kept in mind constantly that there must be no hesitation to cut away a great deal of the branches.

When these trees reach a size that the diameter of the main stem is, say four to six inches, it is waste of time to transplant them excepting in cases where preparations have been made beforehand, by root pruning them a year or two in advance.

Of all our northern oaks there are two, *bicolor* and *palustris*, which transplant much easier than any of the others. They will succeed with far less pruning than the rest require. The reason is that they make more small roots than any other sort—a capital lesson to those who think small roots are of but little account.

There are three species better than any of the rest for autumn color. Best of all is the scarlet *coccinea*; next the red, *rubra*, and the third is the pin, *palustris*. A few others show some little change worthy of notice, *imbricaria*, *alba*, *nigra* and *obtusiloba* among them, and especially when in the seedling stages. But such sorts as *macrocarpa*, *bicolor*, *tinctoria*, *castanea*, *Phellos* and *Prinus* are not valuable at all in that way.

Those contemplating planting oaks should set them early, be it spring or fall. Late spring will not do at all for it. If it cannot be done before the buds move, defer it until fall, then do it before the leaves fall. The necessary pruning will take away much of the foliage, the rest should be hand-picked or cut off.

Philadelphia. JOSEPH MEEHAN.

The Flower Garden.

FLOWER GARDEN NOTES.

The bulb beds will now need attention. If a lot of mulching has been put on the beds, the most of it should now be removed as the warm days of spring will cause the leaves to draw up and bleach, and make them an easy prey to the late frosts of spring. A word about mulching may not be amiss at this season of the year in regard to the covering up of bulb beds. The idea is, I think, altogether wrong, and I believe the practice does more harm than good. How often we see beds of such hardy bulbous plants as tulips, hyacinths and narcissus covered up to exclude all frost with the result that when this is taken off in spring we find a mass of bleached leaves that the first



HYPERICUM MOSERIANUM

light frost will cut to the ground, and the labor and expense will all have been in vain.

We grow a great many bulbs, in fact the garden is alive with them, from the modest snowdrop to the choicest bulbs that money can buy, and we leave all our bulbs in the ground from year to year. I think the secret of our success lies in the fact that we do not mulch any of our bulb beds till spring. For some time the narcissus have been showing above ground, and there they remain, the frost seeming to have no effect on them whatever. In March, when the frost is partly out of the ground, we will give all the beds a light coating of decayed manure; this will be left on all summer to act as a mulch and feed the plants when they most need it.

The more tender class of roses, such as the hybrid tea and tea, which have been heavily mulched, should now have part of it taken off, as the plants may begin to grow under the covering. All the covering should not be taken off at once, as the sudden change may injure the wood and buds. The hybrid perpetuals can now be pruned, cutting out all weak wood to one eye and the stronger shoots accordingly. It is well to leave the mulch on these roses all summer; this keeps them from drying out so quick. It is advisable to renew the mulching in June; this will help to feed the plants more and cause them to make a stronger growth for the following year's flowering.

Climbing roses do not need much pruning; the long shoots should have the ends cut off; this will cause them to break

more evenly and give more flowers. All dead wood should be cut out and the weak wood thinned.

The cold frames will now need more attention in the way of airing and watering. The ground around the plants should be kept well cultivated; this will encourage the plants into more rapid growth and to give early flowers. Our early sown pansies are now in fine flower in the frames; these will be left there and they will give us a good supply of flowers till late in spring. The daisies (*Bellis perennis*) are also in good flower; these if potted up now make nice plants for the greenhouse or window and last a long time in flower. DAVID FRASER.

Mahwah, N. J.

VINES TO COVER A BOARD FENCE.

On the north side of my lot, separating it from a public lane, is a tight board fence, six feet high and about 100 ft. in length. I would like to plant some climbers of rapid growth so as to change its unsightly appearance to one of beauty. What would you recommend, either climbing vines or annuals, to give sufficient variety, to produce flowers and to have rapid enough growth to cover the fence in the season? How close should they be planted? Any other cultural directions will be appreciated.

Ontario.

C. E. G.

We will presume that the position referred to obtains a fair amount of sunlight during the growing season. If a permanent, luxurious vine effect is desired,

a border 2 to 3 feet wide and 2 feet deep should be made close to the fence and filled with good soil, mulched with manure in the winter and watered in dry seasons during summer. If any large trees are growing near the bed on either side, place boards against the side of the trench toward the tree fully ten feet each side of the nearest point of the tree to the trench. These boards should extend from within four inches of the top of the bed to the bottom, being intended as a barrier against the encroachment of the tree roots which would rob the bed of its moisture and nutriment.

If the scantling framework of the fence is towards you run galvanized clothes-line-wire from scantling to scantling in perpendicular lines eight to ten inches apart, carrying the wire up to the top of the fence boards and staple them there. The little triangle formed by the boards, upper scantling and the wire, allows the vines to get in behind the wire and obtain sufficient support to allow them to trail down without danger of breaking away.

If the smooth or finished side is towards you, run 1x4s along the face parallel to those on the opposite side, painting them the same color as their surroundings, if they are painted. Commencing at the rear of your lot place some *Ampelopsis quinquefolia* (the Virginia Creeper) four feet apart, for quick effect. This vine is not suitable for the decoration of one's own house, but is all right on a neighbor's, where you can see it at a distance from your window when it is in the glory of its fall coloring. Then plant a batch of the Cinnamon vine (*Dioscorea Batata*)

about a foot apart. The small tubers are cheap. This is herbaceous, dying down each fall. Following these you can use the trumpet vine (*Tecoma radicans*) which may require a slight protection in winter easily afforded by throwing bagging or straw over the tops; plant six feet apart. *Celastrus scandens* (the climbing bitter-sweet) may be planted eight to ten feet apart and its leader trained horizontally about four feet from the ground. The scarlet trumpet honeysuckle (*Lonicera sempervirens*) planted four feet apart, and when well established sheared back to within eighteen inches of the fence. *Clematis flammula* and *C. virginiana*

THE SNOWDROPS.

No spring flower is a more general favorite than the snowdrop. How beautiful they are already, nestling in the snow! They opened their first flowers on the 7th of February, and we will soon have nice colonies of them in flower all over the garden. There is a number of varieties but the Elwes' Giant is one of the best, although the common single one (*Galanthus nivalis*) is the first to flower. *G. Imperati*, *G. latifolius* and *G. plicatus* are not yet in flower, but will soon be if the weather keeps open.

Snowdrops are one of the easiest bulbs to grow. All they require is to be planted

more prized than the choicest rose or orchid the greenhouse can produce.

Mahwah, N. J.

DAVID FRASER.

CHRYSANTHEMUMS FOR THE GARDEN.

In the October 15 number of GARDENING 704 published interesting communications on the growing of chrysanthemums supplemented with names of desirable new varieties. But will you allow an old time lover of the Queen of Autumn to inquire what has become of the beautiful large double chrysanthemums of the Chinese type, that forty or more years ago grew in our grandmothers' gardens. Yellow was the prevailing color, but white and blood red flowers were often seen. The plants remained in the open ground from year to year, protected over winter by a covering of leaves, and about the middle of October were in a blaze of bloom.

Newer varieties having larger flowers and of more novel coloring have recently been introduced, but the writer has again and again found these promised "beauties" unsatisfactory in the open ground on account of not coming into bloom early enough to escape our October ber frosts. Possibly readers of GARDENING can be informed how to obtain the old, hardy, early chrysanthemums referred to and if so the writer is sure the good news will be welcomed with sincere thanks.

S. N. W.

Strasburg, Pa.

No rational person ever recommended the big Japanese varieties so much thought of for indoor use for outdoor cultivation in Pennsylvania. The old varieties or type you inquire about have fallen into disrepute simply because the people have dropped them so as to take hold of the newer and gayer and bigger sorts; it is simply a matter of taste. If there is no sale for those old kinds you cannot expect that any live florist would carry such a dead weight as they would be in stock. At the same time if you are willing to pay for them you can get all you want of them. Try John Saul, Washington.

THE GOW PARSNIP.

(*Heracleum lanatum*.)

This umbelliferous plant can be used quite effectively in large wild gardens, on the face of bluffs or on the banks of ravines, provided they obtain a fair amount of moisture in the early summer months. They should be planted among low underbrush or grasses; anything to hide their browned leafage in August, when after blooming, the foliage dies down and the plant remains almost dormant until next season. They reach their perfection, however, in damp places in full sunlight, where they have been known to reach a height of nine feet, bearing umbels one and a half feet in diameter, composed of numerous small white flowers. They bloom in the latter part of June and remain in good condition a long time.

A group of eight or ten plants in a suitable position have a grand, stately look. Many of us have wild, almost waste places, that would be much improved if a group of these plants were intelligently introduced.

The species mentioned above is indigenous to the U. S. *H. sibiricum* and *H. villosum*, from the Caucasus, growing over ten feet, are sometimes used in wild gardening in England. "Le Jardin" illustrates a plant of *H. persicum* growing in the garden, St. Maurice, Lille, that



ELWES' GIANT SNOWDROP. (*Galanthus Elwesii*.)

placed six feet apart, and finally in the most conspicuous position place *Clematis paniculata* five to six feet apart and treat as recommended in recent numbers of GARDENING.

All vines mentioned so far should be hardy with you under a winter's mulch. If you desire no others, and the expense of making the beds is an item to be considered, allow each plant (save the border of cinnamon vines) a hole three feet square, but if the border is made as first suggested you can grow for a few years in between the permanent vines any or all of the following from seed sown in the ground where they are to bloom: sweet peas (start early), morning glories, Lobb's nasturtiums, gourds (if the situation is hot) and the variegated annual hop vine. The scarlet runner bean might do in full sun. *Cobæa scandens* and *Pasiflora Pfordti*, to be obtained from the florist, placed out when the weather is settled and the cold nights past, will do well. The cobæa will cover a large space and bloom even after light frosts.

and left alone; they will grow stronger from year to year and make a fine show if planted in a mass in some corner of the lawn or amongst deciduous shrubs where hardly anything else will grow. They are also charming if planted near the house where they can be seen from the windows; in this way they can be associated with other bulbs that flower about the same time, namely the winter aconite, *Scilla siberica*, crocus and chionodoxas or planted in the hyacinth or tulip beds; in this way beds in the vicinity of the house are kept gay a longer period, and the foliage of the snowdrops makes a nice groundwork for the hyacinths or tulips. But these early spring flowers are not much seen in gardens. They are noticeably absent from the grounds of the country homes of those who live in the city in winter, but the gardener in charge should see that there is a patch of snowdrops, for in March, when the greenhouses are full of bedding plants and flowers are scarce, a colony of snowdrops will help to swell the flower basket and may be



POLYGONUM BALDSCHUANICUM.

must be over fourteen feet high, judging by the figure of a man standing by it. There is a new variety *H. Mattegazzianum* remarkable in the size of its white flower heads, the umbels being four feet across. The plant is said to grow six feet high.

GARDENING IN TEXAS—AQUATICS.

Our climate is very variable. Our winters for the past two or three years have been so mild that the tenderest plants did well the winter through. This winter started in the same way, but suddenly, with only a few hours warning it was freezing. It thawed and then froze again, until now everything has been killed. Our summers are so extremely hot that when the cool breeze from the Gulf comes over the hot land it is immediately turned into dry salt air. I am very fond of flowers and have nice grounds but have become almost discouraged. Last summer I had my conservatory filled with choice flowers, but when the summer was over I had only a few ferns left. It may be that I do not know how to meet the requirements of this trying climate. Can

some reader of GARDENING assist me?

Can you suggest some grass suitable for an indoor aquarium that will always look green under water and that will thrive?

I would also like advice as to a suitable water lily for an out-door aquarium five feet wide and four feet deep. I wish something with not too large a leaf and that will stand out of the water (not laying flat upon the surface), will stand a warm climate and bloom continuously.

Galveston, Tex.

J. N. S.

We would suggest *Papyrus antiquorum* for a handsome grass. Its beautiful tufts stand up out of the water and are particularly graceful. It is of very easy growth. The pretty little "Parrot's Feather" (*Myriophyllum*) is a good subject for aquarium planting also. It is small and a neat growing plant. We are at a loss to name a water lily that has "leaves above the water and blooms continuously." *Nelumbium speciosum* stands above the water but only blooms part of the season, while nymphaeas, especially the *Zanzibarensis* type, will

bloom continually so long as there is no frost to check them, yet their leaves lie mostly on the surface and shut out light below.

It will be best to try a variety of plants for the aquarium and weed out the undesirable if any such are planted.

Oneco, Fla.

REASONER BROS.

POLYGONUM BALDSCHUANICUM.

In our issue of February 1, 1897, we called the attention of our readers to this new climbing polygonum, and are now able to present an illustration of a plant photographed in the gardens of Messrs. V. Lemoine & Son, Nancy, France. We then stated that it bloomed from June until September, which would bring it up to the time that the somewhat similar flowers of the *Clematis paniculata* appear.

At this season of the year when we are enjoying one member of this family at breakfast, in the shape of buckwheat cakes, it is pleasing to anticipate the pleasures of the future, when we may have this beautiful climber in our gardens.

A limited stock was placed upon the European market last fall at ten francs each, but soon bought up. It is now being propagated and will undoubtedly be one of the novelties of merit of 1898.

While the list of polygonums contains a vast number of weeds, many of which are door-yard pests, some are quite ornamental when in suitable positions. As a rule they are root-spreaders and therefore caution should be used when planting.

One of the most ornamental is the Japanese species, *P. cuspidatum* and its variety *crispum*, the type growing about five feet high and producing its creamy-white flowers in drooping feathery panicles in July and August.

Another one not weedy in its nature is *P. affine*, from Nepal, with rosy-red flowers in dense spikes in autumn and less than a foot in height. Of late years a more robust form, *P. sachalinense*, from the island of Saghalin between Siberia and Japan, has been recommended both for a forage plant and to ornament wild waste places where the ground is moist, where it will attain a height of eight to ten feet, producing racemes of flowers of a greenish-white color.

CARPET BEDDING.

In making the American flag of plants on a lawn what is the best plant to use in making the whitestars? Which is the best white that can be raised from seed sown now?

NEW SUBSCRIBER.

Minnesota.

The best white for the purpose is the dwarf alyssum raised from cuttings. It can be raised from seed but in that case the plants must be sorted as to height for seedling plants vary in this respect. We have also used *Echeveria secunda glauca* and santolina for the purpose, and though neither is quite so white as the alyssum they will stand more unfavorable weather.

FRED. KANST.

Chicago.

WALL TRELLIS.

One of the most durable, cheapest and most easily made trellises for kitchen walls, sides of barns, tall fences or out-buildings, where one desires to train roses or vines of any description, is made as follows. Take dressed 2x4s and spike them securely on to the wall, running longitudinally to the desired height, placed with the narrow face against the wall and about three feet apart. Run

pieces of same material across the top and bottom.

This wood work at this point might be said to resemble a picture frame laid against the wall. Paint it the same color as its surroundings. Drive in galvanized iron staples one foot apart all around this frame, top, bottom and all, and then

The great ox-eye has long been in cultivation and is found wild inhabiting damp situations in eastern Europe. The specific name *uliginosum* signifies moisture loving, and it is only under conditions where an unfailing supply of this requisite is obtained that this plant can be seen in perfection. Here it will attain a height of

means common in the sense of being frequently seen. It is a hardy annual, perpetuating itself, so that after the seed is once sown, or the plants set out, it can be depended on to reproduce itself. Seedlings in plenty will be found in late summer and fall, and more the following spring, in the vicinity of the original plant or plants, but it never becomes the nuisance in this respect that morning glories sometimes do.

It produces its exceedingly fragrant flowers until cut off by frost, the crop being more abundant if the seed vessels are not allowed to mature, and it is decorative and artistic in habit and in flower.

Some may object to the blossoms closing during midday in warm bright weather, but others find this an attraction as it tends to vary the appearance of a garden to have its numerous, pure white blooms expand for the cooler morning and evening hours and close for a mid-day siesta.

But, while a fair proportion of the gardening public is more or less alive to the merits of this *nicotiana* for use out of doors, but few amateurs are aware that it makes a desirable house plant.

The specimen photographed for the accompanying engraving was a well grown, self-sown fall seedling when lifted late in October, 1895, and potted in ordinary garden soil. It was kept in a comparatively cool room opening from one that was thoroughly warmed during the day by stove heat (being moved to a frost-proof location on dangerously cold nights), and the humidity of the atmosphere secured by evaporation from an open vessel of water standing on the stove.

From its position in a south bay window the plant had lots of sunshine both in the forenoon and afternoon. It was sadly neglected in the matter of watering, sometimes to the extent of badly drooping leaves, but always revived promptly on receiving the needed moisture.

It began to flower in February, and was never a day without blossoms for more than two months, being past its prime, but still making a good appearance on Easter Sunday, April 5, 1896. And after the buds on the second blossom stalk began to expand there were from nine to eleven flowers open constantly, each one lasting in good condition for several days and remaining open all of the time, instead of following its out of door fashion of closing during a part of each day.

When planted out again in the spring this plant, as well as two others that were similarly treated, threw up numerous stalks and flowered profusely long before the self-sown seedlings came into bloom.

In the garden or as a house plant *Nicotiana affinis* is sure to please every one that tries it. FANNY COPLEY SEAVEY.



THE ORNAMENTAL TOBACCO (*Nicotiana affinis*) AS A WINDOW PLANT.

run heavy twisted galvanized "clothes-line" wire across zig-zag manner and fasten the ends. Once done it will last for years and the wood work will not rot out or become shaky as will the ordinary trellises that rest in the ground.

PYRETHRUM ULIGINOSUM. (Great Ox-eye).

The common name, "Great ox-eye," implies the further addition of the word "daisy" in contra-distinction to the common European weed of our dry fields, the ox-eye daisy or marguerite. This is the *Chrysanthemum leucanthemum* of botanists and is in fact a very near relative to the one illustrated, as the genus *pyrethrum* is considered synonymous with that of *chrysanthemum* by many authors.

five to six feet, if not more, soon forming large clumps and in August producing numerous large daisy-like flowers. It is perfectly hardy and its flowers quite decorative when cut.

It can be grown in the ordinary borders with fair success, much depending upon the humidity of the season and the amount of artificial watering it receives.

Window Plants.

NICOTIANA AFFINIS.

The value of *Nicotiana affinis*, or Ornamental Tobacco, as a decorative flowering plant for garden use is already fairly well known, although as yet it is by no

Roses.

CLIMBING ROSES.

Lovers of climbing roses for pillars, posts or trellises can take their choice of quite a list of novelties this season. First, and among the hardiest are Manda's hybrids of *Rosa Wichuraiana* "Manda's Triumph," producing large clusters of double pure white, sweet scented flowers. "Universal Favorite" (the most vigorous of the set) bearing double rose-colored flowers, two inches in diameter and fragrant. "South Orange Perfection," a

THE GIANT OX-EYE. (*Pyrethrum uliginosum*).

creeping form, blooms a blush pink, changing to white, and "Pink Roamer," having sweet briar blood in it, producing single flowers nearly two inches in diameter, a bright pink and almost white in the center. Established plants will throw up shoots fifteen or more feet in a season.

Then comes an English introduction, "Paul's Carmine Pillar Rose," with large single carmine flowers from top to bottom on an established plant. Mr. John N. May, a rose expert who saw it in bloom in England, pronounced it one of the finest sights he had ever seen.

Just as handsome is climbing Wootton, a sport from the hybrid tea, Souvenir de Wootton, having the same double rich rosy carmine flowers. It is a strong grower, making canes ten to fifteen feet, and is claimed to be hardy in New Jersey.

The Yellow Rambler (*Aglaia*) claimed to have the same habit as the Crimson Rambler, producing its small yellow flowers in clusters.

The Lord Penzance Hybrid Sweet Briars are vigorous enough to be treated as climbers, and in addition to the perfume of the foliage, which they retain from the parent, they produce single flowers deep rose, dark crimson, pure white, peach and gorgeous crimson, and mature handsome berries.

Various old fashioned garden roses and the Austrian Briars have been used on the English sweet briar to produce these hybrids. We must remember that in new varieties we can only obtain small plants and must not expect much the first year and must protect well the first winter at least.

RESULTS OF PROPER WINTER PROTECTION.

Having experienced a fall in temperature at Egandale to 25° below zero, followed by a week during which the thermometer rarely got higher than 5° above at midday, settling to below zero at night, I was a little anxious when on February 10 the mild spell gave me an opportunity to examine some "new things" that were passing the first winter with me. I first examined the new rose Climbing Wootton, that gave enough blooms last summer to compensate for its cost even if it failed to endure over winter under protection. To my joy I found it in most perfect condition, the eyes full and plump and the wood firm and green. Then I took a look at Paul's Carmine Pillar Rose, that charming introduction from England, and found it in the same satisfactory condition. Both of these roses are considered rather hardy and they might have done well under a simpler method of covering, still my way was so easy and as it provides a circulation of air around the plants, I will describe it.

Both are grown as pillar roses in individual beds cut in the lawn. They remained attached to their roots until about December 1st in order to ripen as much wood as possible. Artificial watering had been withheld after September 1st for the same reason. They were taken down, the vines loosely tied together, and laid directly upon the sod, which they touched only here and there. Short branches of spruce were worked in and around them to fill in open spaces and also laid on top. Two boards one

foot wide and nine in length were temporarily held in place, one on each side, forming a trough. Oak leaves that had been gathered when dry and placed under shelter to keep them so, were then filled in loosely so as to come up to the top of the boards. Then a cover wider than the top was nailed on and the end away from the post closed by a board. The other end, having the post in the way, was closed up by one-year-cut juniper branches used for covering the year before and saved that their dry sharp pointed leaves might repel over-inquisitive field mice. Coarse strawy manure was then placed over the box, and for about two feet each side to keep out frost from the ground.

I also opened up a cold frame which I had protected so as to have in shape for starting ranunculus and found the soil unfrozen and in planting condition. This had about six inches of dry leaves, placed immediately upon the soil, then the sash, then a wooden shutter, and finally rough litter. In an adjoining sash, protected in the same manner but the leaves omitted, the earth was also unfrozen.

I found evidence among the anemones in this sash of the burrowing of field mice. An ordinary mouse trap baited with cheese soon exterminated them.

W. C. EGAN.

ROSA MOSCHATA.

Referring to my notes on the beautiful *Rosa moschata* in a late number of GARDENING Mr. Henry S. Hunnewell writes me:

"In the last number of GARDENING I see

that you speak of *Rosa moschata* as a rose for the south. I am inclined to think that it would prove hardy at Philadelphia with you.

"I bought a small plant of the Shady Hill Nurseries in the spring of 1893 that went through the first two winters with only the tips injured, but last winter killed it to the ground; but I am now protecting last summer's growth in the hope of getting another year's bloom from it.

"Mr. Stiles was very enthusiastic over this rose as he saw it growing in England at Mr. Robinson's place and I advised him to try it, although I am afraid that New York may be too severe for it.

"It proved with me to be by far the finest rose in a small collection of single roses I have at Wellesley, throwing out very long arching stems which were covered with bloom. I have been rather interested in single roses and regret that they are not more often planted. *Rosa setigera* is very successful here grown either as a bush or a climber and the single form of the Scotch *R. spinosissima* I like very much, but I found it hard to buy and had to get it from the Arboretum.

"If the polyantha roses are hardy with you I should think they would be popular. I manage to keep about half of mine alive by covering them over in winter, and I only regret that the *moschata* rose is too large to treat in the same way.

"Hoping that you will try the *R. moschata* at Germantown and that it will prove hardy, I am very truly yours, Henry S. Hunnewell."

I may add to this that steps have been taken to procure the *moschata* and give it a trial at Germantown.

JOSEPH MEEHAN.

The Greenhouse.

A NEW USE FOR SULPHUR.

I made a discovery in taking up geraniums this autumn that was of considerable service to me. It may not be new, but it certainly was so to me.

In cutting old geraniums back before taking up, I rubbed a little flower of sulphur on each cut surface, and none of those so treated mildewed or moulded, or at least very little, so little as not to amount to anything. Those not so treated would mildew back an inch and often more.

This is not a theory, but a fact, and I think entirely new. I intend to carry out this idea further and will write you results.

Tennessee.

E. O. NATHURST.

The above interesting experiment is entirely new to me both in theory and practice, and as the correspondent appears very positive as to results it may be of much practical use. In pruning orchards where large limbs have sometimes to be sawed off the wound is covered with a material called grafting wax which prevents decay of the wound, simply, I think, because it prevents the atmosphere affecting it. Sulphur may be one of the ingredients of that; I am not sure.

Without attempting a scientific knowledge in the matter I would suppose that the reason the geranium shoots did not decay back an inch or so after cutting, was this: The sap that exuded from the wound would be attacked by one of the

low vegetable or animal organisms now known under the name of bacteria, which covers thousands of species, totally invisible to the naked eye, but one or other of them are ever ready to prey on the animal or vegetable kingdom whenever conditions are favorable. They, the bacteria, would cause decay of the tissue as described till the vigor of the plant resisted it, when decay would stop.

As sulphur is still the best known antidote for these minute creatures, particularly those that scientists class as belonging to the vegetable kingdom (although it puzzles many of them where to class them) it doubtless prevented the bacteria from getting a lodgment and the decay of tissue did not take place; it was kept healthy till the normal circulation of the sap was restored. We have all seen this dying back of a cut back stem occur many times, and the writer will test the efficacy of what has been asserted by our correspondent at the earliest opportunity.

WM. SCOTT.

GREENHOUSE BUILDING.

I built a small lean-to greenhouse last fall and I have had so much pleasure out of it this winter that I want to have something a little better.

If the house faces south it can be 20 ft. long, and if it faces east it can be 30 ft. long. What is the best style for all purposes? A three quarter or even span, and how wide should it be? Would I get as good results by facing east? What is the best size pipe to use and how many runs should be used?

H.

The three-quarter span houses are only used for a special purpose and are supposed to be the best houses for rose growing. For a general plant growing house, where a mixed collection is kept, the house that is known as a three-quarter span is out of the question. There is also another style of house which for the past five or six years has been built in different parts of the country known as the short-span-to-the-south, and which is the reverse of the three-quarter span. Neither of these are suitable for the amateur or the professional where a mixed collection of plants are grown, and it is a question to-day whether the equal span is not the best for all purposes. Light comes from the north as well as the south.

I would strongly advise "H." to build the house with the ridge running north and south; the sides or slope of the glass would then be east and west. If the glass is not too small (12x12 is a good size, and 14 inches wide is better) this house will grow any flowers, and for a mixed collection of plants is much better than a house whose broadside faces south, and is not so hot in summer.

Nineteen feet wide is a good convenient width. It allows two paths of 2 feet 9 inches each, two side benches of 3 feet each and a middle bench that is convenient to reach from both sides. It is cheaper to build in proportion to the bench room you obtain than an 11 or 12-foot house. If "H." will let the editor know how large the house will be information on how best to heat it, and perhaps some hints on construction, will be given.

WM. SCOTT.

BEGONIA FROEBELII INCOMPARABILIS.

We raised a number of plants of this new begonia from seed last March and it flowered very well in late summer and fall. It is a hybrid between *B. Froebelii* and *B. polypetala*. It is of dwarf growth but has very large foliage. The flowers

are scarlet, one to two inches in diameter, and carried on stout stalks nine to eighteen inches high. It is easily raised from seed, requiring the same treatment as the tuberous begonias. It goes to rest about the end of December, and can be stored away under the benches till spring. It is a begonia that is well worth growing, flowering as it does in the fall when selections of flowering plants are scarce. For cut flowers it is of very little use, although the flowers last for some time on the plant.

DAVID FRASER.

Mahwah, N. J.

SAGO PALM.

I have a small stem of a sago palm and I would like to learn how to start it to grow. It has no roots.

H. B.

Small stems of *Cycas revoluta* (frequently called sago palm) can be started as follows: Pot them in as small pots as can be conveniently used; for example, if the stem is about three inches in diameter pot it into a 4-inch pot, if four inches in diameter use a 5 or 6 inch pot, burying the stem about half its length in the soil. Almost any light sandy soil that is not too poor will answer for the purpose, and it should be pressed firmly into the pot.

Place in a temperature of 70° and keep moist, and from one to four leaves will usually start out in the course of six weeks to two months. Do not be disappointed if only one leaf appears during the first year, for the growth of the young cycas is frequently a very deliberate matter.

W. H. TAPLIN.

KEROSENE EMULSION.

The following comes from Wenona, Ill.: "I have some scale bugs on my palms, etc. Will you be kind enough to send me the receipt for the kerosene emulsion to spray them with."

Take one-half pint of kerosene and stir in one pint of new milk. It must be stirred and mixed continuously and thoroughly for half an hour and if you will do that you will have an emulsion. When using add a quarter of a pint of this to two gallons of water, and it is well when using this to spray to keep the water well stirred. For a small collection of palms it is best, safest and most thorough, to saturate a sponge with the mixture when diluted, and wipe off the scale. It does not take long and is far more effectual than spraying.

WM. SCOTT.

TREE FERNS.

I have several tree ferns with trunks two feet high but cannot get them to produce large fronds. Only small ones are produced and few at that. The plants are not pot bound and the temperature is maintained at 60° to 70°. What is the trouble?

C. T. L.

Pennsylvania.

An omission of some importance is noted in the communication of our correspondent, in the fact that he does not state what species of tree fern is referred to. This naturally makes it more difficult to give a definite answer to the question.

Assuming, however, that *Dicksonia antarctica* is the plant in question, as this is the tree fern most common in plant collections, it may be stated that a temperature of 60° to 70° during the winter months is rather too high for the permanent welfare of the plant, 45° to 55° being a more suitable range of tempera-



SWAINSONA GALEGIFOLIA ALBA.

ture for this species.

The imported stems of *Dicksonia antarctica* being denuded of both roots and fronds are naturally weakened somewhat, and for a year or two afterward the growth is likely to be small. A stem of the size noted (2 feet) under these conditions would not be likely to throw out fronds more than one or two feet in length, and the first year's growth might be much shorter than this.

In potting tree ferns be careful to have the pots well drained, and use rather coarse compost composed of turfy loam and peat in about equal proportions, and water freely after the plants become established. From this time forward throughout the summer these plants will require shading, and after the weather becomes hot a light syringing overhead is beneficial in bright weather, though this had better be omitted while young fronds are unfolding.

It may be added in conclusion that tree ferns enjoy plenty of fresh air, and should never be allowed to become very dry.

W. H. TAPLIN.

SWAINSONA GALEGIFOLIA ALBA.

The engraving shows a vase of cut sprays of this charming white flowering greenhouse plant. It is exceedingly useful in supplying flowers almost the year around. The plants grow freely under liberal treatment, attaining a height of 5 or 6 feet. A temperature of 50° to 55° at night seems to suit them admirably.

Seeds of it are offered in some catalogues, but as there is a doubt about its coming quite true from seed, being a sport from the colored type—*galegifolia*—and as it roots readily from cuttings, it is hardly worth while to risk growing it from seed.

The swainsona belongs to the *Leguminosæ* as will be surmised from the shape of the flowers in the engraving. It is a native of Australia and the species are quite numerous and of various colors. Of the *galegifolia* there is a pink and also a red variety in addition to the white.

As indicated above it should have liberal treatment—plenty of root room, either planted out in a solid, well drained bed, or a large pot or box. Abundance

of water at the root when it is growing freely is about all the attention it requires. Insects have so far not bothered it, so that taking it all in all, the surprise is that it has not found its way into general cultivation years ago. W.

TORENIA FOURNIERI, from Cochin-China, is a much-branched half hardy annual growing from six to eight inches high, and a free all summer bloomer, most excellent for low borders and beds, doing well also as a pot plant. Its violet colored flowers are very interesting and always command admiration. It is easily raised from seed in a hot-bed and can also be increased by cuttings. But it should not be planted out until all danger from frost is past. Pinching back a little is advisable to produce compactness.

THE catalogue of Messrs. Johnson & Stokes, Philadelphia, is to be specially commended for its handsome half tone illustrations from photographs from nature. This firm has certainly solved the problem of successfully adapting the half-tone engraving to catalogue illustration.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of you, flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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OUR attention has been called to the fact that in the article on *Hydrangea Otaksa* in last issue we failed to note the color of the flowers, which is pink. One of our readers feared that the illustration would lead the uninformed to believe the flowers were white. We might add that under certain conditions of soil the flowers are blue.

TWO VINES of the handsome half hardy *Mina sanguinea* came under our notice last summer. One in rich light soil, abundantly watered, grew vigorously but gave very few flowers. The other, planted in a rather strong clay loam and receiving only the water that came from the heavens, grew only about eight feet high but bloomed profusely.

IN ONE of the suburbs of Chicago, so far away from the more thickly settled part that a public walk at one side of the road is sufficient, the space on the other side, between the road and fence, some twenty five feet wide, is planted largely with groups of sweet briars. Hundreds of plants are used. The delightful perfume emanating from them after a rain makes

a ride past them a feature well worth a special effort.

IPOMEA HEAVENLY BLUE in rich soil and plenty of moisture, grew strongly but did not bloom before the frost caught it, while plants in a window box, where root growth was somewhat restricted, bloomed freely.

THOSE of our readers who have planted Bechtel's double flowering crab (and all lovers of a handsome flowering small tree should have it), had better examine them and see if the rabbits are injuring them. These rodents seem to be particularly fond of this species, as in a group of twenty young trees over two-thirds had been visited by them to our knowledge. Where this variety had been grafted upon young wild stock in the borders of the woods, they cut off the young growth as far up as they could reach, but did not touch the wild stock.

THE TERM Hawthorn or Haw-thorn, with which we are so familiar, means literally "hedge thorn," as in the earlier English days the words "haw" or "hay" were synonymous with the word "hedge." The cratægus was used at a very early date for hedges, and also bore the name "Quick" or "Quick-set." Alexander Pope mentions in his humorous catalogue quotation "A quick-set hog, shot up into a porcupine, by its being forgot a week in rainy weather." At one time the white thorn (*C. oxycantha*) was believed to have been used for the sacred crown of thorns placed by the Jews upon the head of our Lord.

THE PLANT-LORE AND GARDEN-CRAFT OF SHAKESPEARE, by Henry N. Ellacombe, M. A., published by Edward Arnold, London and New York. This most interesting work by the Vicar of Bitton is now before the public in its third edition, with a large increase of illustrations over the former issues. As the title indicates it appeals to all those who associate sentiment and poetry with their love for flowers. Some 378 pages are devoted to quotations from Shakespeare's works touching upon and referring to plants known in his time, exhibiting the same intimate knowledge of them that he displayed of the various workings of nature, and of the crafts and professions of men. Not the least interesting part of this work is the etymological history freely dilated upon of some of the quaint common names that still cling to many denizens of our gardens, introducing to explain them, quotations from the early writers Gerard, Bacon, Parkinson and others. Price \$3.50. Can be obtained of the publishers of GARDENING.

VEGETABLE GARDENING, by Samuel B. Green, Professor of Horticulture in the University of Minnesota, Webb Publishing Co. St. Paul, Minn. This class book manual of some 220 pages, prepared as stated in the title page, "expressly for the classes of the school of Agriculture of the University of Minnesota," contains a concise description of the practical methods of the cultivation of all garden vegetables. It is especially valuable to the growers of the Northern Mississippi Valley, as but few works covering the subject, adapted to this range of climate, have yet appeared. Yet its teachings may, with some allowance for climatic conditions, be followed elsewhere, as the principles involved in the method of culture advocated are sound, and are based upon the results of recent experiments there and elsewhere. Full instructions are given upon the treatment of manures,

hotbeds and vegetable greenhouses. Eighteen pages are devoted to insects injurious to vegetables and the best methods of extermination. The book contains 115 illustrations, most of which are original. Price \$1.25. Can be obtained from publishers of GARDENING.

IF YOU WANT an easily grown centre piece for a home dinner decoration, take two or three baked clay fern dishes, sold by all dealers in flower pots, say nine inches in diameter, fill with soil, placing pieces of broken pots over the drainage hole, on which place an empty glass tumbler. This tumbler is imbedded in the soil and stands right side up. Sow in this soil evenly seeds of the annual *Gypsophila muralis*, and imbed the fern dish in ashes in some sunny position, watering it occasionally in dry weather. Allow plenty of room for each fern dish, as when the *Gypsophila* grows up to a height of about a foot it will spread and slightly droop over the sides of the dish. Some will produce more perfectly shaped plants than others. When the fairy-like minute pink flowers appear, and you desire to use it on the table, lift from the ashes and you will find that the dish will wash off bright and clean. The glass in the center will be entirely hidden by the plant and the cushion-like fleecy mass can be used as it is. Or the glass may be filled with water and cut flowers appropriate for the situation placed therein. When through, the dish can be replaced in the ashes and remain until wanted again.

BROWALLIA ELATA, a tender annual from Peru, produces a fine mass of deep blue flowers from the middle of June until frost, if started in March in a hot-bed. It commences to bloom when but a few inches high and continues on until it reaches a height of about eighteen inches. It seems to carry about the same number of flowers at all times, always presenting a tidy appearance, as the blooms drop off as soon as faded. If grown in a mass, as it should be, it requires no staking, as its numerous branches interlace with each other until well towards the end of the season, when heavy storms sometimes crush down some portions of the mass. By driving down light cane stakes a few inches in from the margin of the group and running a light string around them, and through the bed here and there from stake to stake, carrying the string a few inches below the blooms, they can be kept in form and the stakes and strings not seen. To cross from stake to stake, take a thin piece of cane longer than the diameter of the group, cut a hole in the thicker end so as to form an "eye" to your improvised needle, which can be passed through in between the stems without damage and carry the string with it.

CATALOGUES RECEIVED.

Ellwanger & Barry, Rochester, N. Y., price list of trees, shrubs, new and standard roses; A. W. Livingston's Sons, Columbus, O., seeds, plants, bulbs, small fruits, implements; Harmon & Son, South Bend, Ind., seeds, fertilizers, implements, etc.; Alpine Nurseries, Boulder, Colo., hardy perennial plants; Benj. Hammond, Fishkill on Hudson, N. Y., slug shot; M. B. Faxon, Boston, Mass., pansy, aster, sweet pea, nasturtium seeds; John Fay Kennell, Rochester, N. Y., price list of gladiolus bulbs; D. Hill, Dundee, Ill., evergreens, ornamentals, fruit trees, etc.; Fort Rouge Greenhouses, Winnipeg, Manitoba, bulbs, plants, cut flowers, nursery stock; Old Colony Nurseries, Plymouth,

Mass., price list of general nursery stock; Wm. Rennie, Toronto, Canada, seeds, bulbs, plants, implements; A. B. Davis & Son, Purcellville, Va., roses, chrysanthemums, bedding plants, etc.; Wm. H. Spooner, Jamaica Plain, Mass., selected list of garden roses; Bush & Son & Meissner, Bushberg, Mo., grape vines; Frederick W. Kelsey, New York, hardy trees, shrubs, plants, bulbs, etc.; Schlegel & Fottler Boston, Mass., seeds.

The Fruit Garden.

HARDY FRUIT TREES.

The writer of a recent article on fruit growing in Central Illinois, Iowa and Nebraska, intimates that the climate has changed there, and that to-day it is possible to grow peaches and apples of the Ben Davis, Jonathan and Winesap varieties in places there where it could not have been done eight or ten years ago.

This led me to think of a question asked me by a correspondent in Western New York a short time ago, which was whether I thought peach trees from the far south would be as well for him to plant as those from near home. My answer was that if the trees had been budded from wood from trees which had been growing there a long time, I did not think the trees would be as good for him. I think it can not be disputed that trees accustom themselves to their surroundings. I think it possible that the Illinois correspondent referred to will find that the well doing of his fruits to-day is not due to climatic changes as much as it is to the later planted trees being of a hardier type. At any rate were I living in a place where a certain fruit was deemed tender I would look to a point near home for my supply, and not to a southern point.

Those engaged in raising seedling English walnuts and Spanish chestnuts from seed know well that hardness depends a great deal on where the seeds matured. Imported seeds of both these fruits give seedlings slightly tender here. The terminal bud and sometimes the youngest wood will be winter killed for several years in succession, but eventually they get over this and are not hurt further. With seeds from home trees, nothing of the kind occurs. They are hardy from the start, not needing any protection at all.

It is exceedingly interesting to watch the behaviour of seedlings of many trees raised from southern seeds. The case of the sweet gum, *Liquidambar styraciflua*, occurs to me. There came under my observation a bed of seedlings raised from seeds gathered near Savannah, Georgia, and another bed, close to it, from Philadelphia seed, the tree being native here. Towards fall the bed of home plants ripened up nicely, the leaves falling off just before freezing weather came. Not so, however, with the southern ones. The freezing weather found them with twigs as fresh and succulent as the others had been two months before. Evidently the plants, so to speak, fancied themselves still in the south, where there was no need to hurry themselves for fear of frost. As may be surmised, they were badly winter killed, and so they were for several years in succession. Little by little they acquired northern ways, finished their growth earlier, and escaped injury eventually.

[CONTINUED PAGE 188.]

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LARGE FLOWERING
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Grows only 4½ feet high.
Color Snowy White, tinted with Rose.

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and other small fruits cheap.

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\$1.50 per barrel. New Varieties, true to name, first quality. Northern Grown. Lists free.
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PLEASE MENTION GARDENING.

And I have seen the same thing occur with plants of hickories, Carolina jasmine and the China tree, *Melia Azederach*. The southern evergreen *Magnolia grandiflora* is another case of the same kind. I remember well when its existence in this city out of doors was thought to be a rarity. Since the introduction of trees from the nearest point their presence is much more common. Seeds are produced from trees in our midst, at the present time, and I am sure the plants from them will be more hardy than seedlings from southern trees.

In conclusion I would repeat to those about to plant fruit or other trees deemed a little tender, get the stock as near home as possible.

JOSEPH MEEHAN.

Philadelphia.

THE QUINCE.

It is not uncommon to hear it said that it is hard to grow quinces. The want of success is often caused by allowing the bushes to carry too much old wood and permitting borers to occupy the trunk. With a little care the quince is a most satisfactory bush to grow, bearing regular crops every year.

The not uncommon recommendation to plant quinces in low ground I have not found to be a good one. Low ground is too often a heavy one, and quinces do not like this. They do like moisture and plenty of it, but not a stiff soil. The mass of fine roots they like to make will not permit of the suggestion of heavy soil. A well enriched loamy soil is what they flourish in, and an abundance of moisture. I have seen excellent results follow the planting of them on slopes near running water, where the soil was always moist, yet well drained. In ordinary garden situations good results are obtained by mulching the surface of the ground about them. The coolness this ensures is as grateful to the roots as the moisture.

The quince appreciates good food. Manure may be used as a mulch with excellent results. Liquid manure, dish water saved from the kitchen, and like compounds, cause the bushes to bear healthy foliage, on sturdy branches.

When manures are freely used I have found less trouble from borers than when the bushes stood uncared for. Manure seems distasteful to the insect. But the bushes should be looked over twice a year and the borers taken out, should any signs of them be discovered. I have found much more satisfaction in the plan of looking over the bushes in this way than in any one I have ever heard of for keeping borers out. With a sharp pointed knife and a piece of wire it takes no more

[CONTINUED PAGE 190.]

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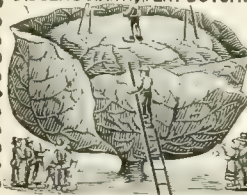
Beaute Inconstante, changes color from yellow to red. White Perle des Jardins, immaculate white. Md. Schwalder, rich pink in clusters, very fragrant. Maman Cochet, rosy pink touched with yellow. Henri Rignon, copper yellow, shaded with red. Md. Scipion Cochet, primrose yellow, rose shadings. Bouquet de Deu, deep golden yellow, great bloomer. The Queen, immense large pure white, very fragrant. American Belle, a grand deep red rose, deliciously fragrant. Corinna, flesh color shaded tawny copper. Crimson Queen, deep velvety crimson, very rich. Augusta Victoria, pure white, always in bloom. Queen of Fragrance, in clusters of 8 to 10 roses, white edged shell pink. Princess of Wales, amber, yellow-tinted with copper and orange. Madame Jules Finger, pure snow white, wax like in texture. Princess of Sagan, called the velvety rose from its richness. J. B. Varronne, rosy pink, bordered with crimson. Yellow Hermosa, a charming yellow of the richest color. Marquis de Villedon, everybody's favorite, always in bloom. Victor Hugo, rich bright pink, finest rose grown. GET UP A CLUB AND GET YOUR COLLECTION FREE. Six

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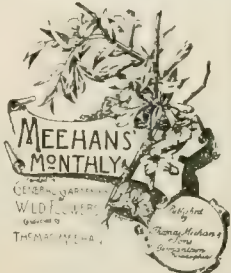
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time to go from tree to tree than it would do to place something about the stems to keep the enemy away.

A word or two about the pruning of the quince. Do not let it run on from year to year without any pruning. Besides that this results in a lot of old branches useless for bearing purposes, there are too many of them. The best plan is to prune a little every year, cutting out where too thick, and cutting back those disposed to grow too long. Occasionally a large one is better cut away entirely, to let younger ones take its place, but good management results in having but few such branches requiring cutting out. Treated in this way there is new wood made every season, and the bush is kept in a bearing condition for many years. Nevertheless quinces are not long lived, and young bushes set out occasionally will be satisfactory.

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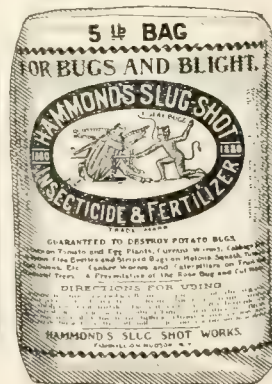
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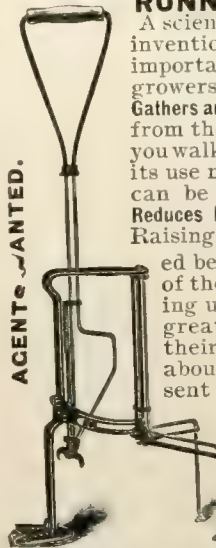
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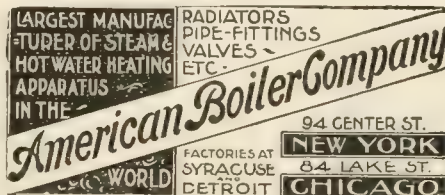
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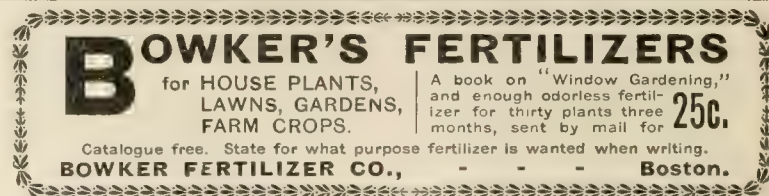
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No. 109.



Waterside planting and Benner Bridge.
PROSPECT PARK, BROOKLYN, N. Y.

Landscape Gardening.

PROSPECT PARK, BROOKLYN, N. Y.

This park is justly considered one of the finest examples of the landscape architect's art. Every advantage has been taken of its natural beauty, blending in harmony therewith creations of the designer's skill until the whole stands out a perfect scheme, combining beauty and utility.

The park is charmingly situated. It lies partly on the picturesque ridge known as the back bone of Long Island; west of the ridge the ground is undulating, while the slope to the east is quite abrupt and varied in contour.

This ridge is historic ground; it was here on August 27, 1776, that Gen'l Sul-

livan, with his Maryland and Delaware patriots, defended the pass against the British troops one long morning, until his command was cut to pieces.

On the lower ground at the foot of the ridge, a series of lakes and water courses meander, and finally debouch into a large lake. The shores of this lake are beautifully broken up into miniature bays and lagoons, among which walks are cunningly carried for the pedestrian who seeks nature in its home.

A high point of the ridge is called Look Out Hill. The view from its top is very fine; below lies the lake shimmering in the sun light, its sinuous shore line seemingly hiding at each projecting point something of greater beauty still beyond.

In the spring months, when violets cover the ground, and magnolias, redbuds and dogwoods mingle their colors with the soft green of the budding leaves, and

throughout the summer's season of dense leafage, with glimpses of lawns and meadows, until the foliage takes on its gorgeous autumnal tints, the view is ever changing and beautiful.

Beyond the park boundaries lie the fertile fields of Long Island, while in the distance can be seen the outer bay and the Atlantic ocean.

The park has an area of 526 acres, or which about 115 acres is natural woodland, comprising tulips, chestnuts, white and red oaks, hard and soft maples, sassafras, etc. Where thinning has been done in this timber, many of the trees, especially the oaks, have branched out from their naked boles. The undergrowth in this natural timber is of Florida dogwood, black haw, etc. The natural character of the woodlands has been preserved as much as possible, the drives through them being of a simple character,

the undergrowth of shrubbery and herbaceous plants being allowed to encroach on their lines.

Seventy acres are open meadow. Long Meadow is a grand sweep of rolling sward throughout its length; the dogwoods are a delight, fringing its borders here and there. The Nether Mead lies under the shelter of Look Out Hill, and is the favorite spot of a flock of South Downs, which add a pastoral effect to the landscape.

Ornamental plantations cover about

stone retaining walls enclose a raised terrace, which is reached by broad steps from which broad tile walks are laid in formal style throughout the garden. Trees planted on the terrace have grown too large and throw too much shade to permit of other than tropical gardening, of which palms, crotons, etc., form a large part.

Near by and reached from the flower garden by a flight of granite steps and a winding walk, is the perennial garden,

houses in the original plan of the park they are placed adjoining the repair shops and barns. The palm house is not large but has many fine plants in it, and is worthy of a better, or at least a more approachable place. The remainder of the houses are used principally for propagating the large number of bedding plants required in the numerous parks and city squares in the charge of the department of parks.

BROOKLYN.

Trees and Shrubs.

THE WEEPING CUT-LEAVED BIRCH.

EDITOR GARDENING: A year or more ago in an article on birches, I believe from the pen of W. C. Egan, it was claimed that anywhere from Chicago to Milwaukee the cut-leaved birch does not do well, that the tops are killed. I took pains to notice the birches about town and I did not succeed in finding more than one or two specimens in which this was a fact, and then I attributed it to extraneous causes. As a rule the birches here are well developed and healthy, and I judge that there is something about our Wisconsin clay that is congenial to the stock these birches are grafted on, and presumably the soil of Chicago is uncongenial as it would be to all but one of our native species.

Will Mr. Meehan tell us what stock is used by nurserymen for this most desirable of lawn trees? I am familiar with the European variety in its home forests, and very closely acquainted with our native species. Were I in need of a large number for home or park decoration I should



260 acres. Much of this has been sadly ruined by over-crowding, or rather say under-thinning. The old adage, "plant thick but thin quick," has not been observed, and consequently many specimens have been ruined; growth and development have been retarded, and the work of recovery is slow and unsatisfactory. The blame for this should largely be laid on the public, who from a sentiment, the growth of ignorance of the necessities of the case, loudly cry out against the vandal who would cut out a tree.

In the ornamental plantations, many fine specimens of the European linden and beech, Norway maples, oaks, etc., are to be found. Japan maples, maiden-hair or ginkgo copper beeches and paviors, have good representatives. Japan maples of 12 to 15 feet in height being among those prominent.

Of shrubs, cornus, viburnums, and crataegus are everywhere plentiful. The Florida dogwood leads all others; it is at home here in every copse and woodland and whether clothed in its white bracts, its dense imbrications of dark green foliage, or in its autumnal tints of crimson and scarlet it stands in this district pre-eminently at the head of North American shrubs.

Rhododendrons, kalmias, andromedas and many other members of the order Ericaceae are to be found doing finely in well sheltered vales and hollows; not in isolated specimens but in groups and masses, with undergrowths of yellow-root, honeysuckle, mahonia, or day lily; a sight to delight the eyes of such of your readers as vainly try to grow them under less hospitable conditions than found here.

The flower garden is a very fine and distinct feature. Elaborately carved



PROSPECT PARK. BROOKLYN, N. Y.

always a delightful spot to the lover of gardening, but here, unfortunately placed on the top of a hill encircled by a carriage drive and bisected by tile paths. The modest old-fashioned plants seem garish in such company, and one can't help wishing the setting were more in the nature of a tree and shrubbery bordered grassy nook.

A location was evidently not provided for the palm house and propagating

procure yellow birch seedlings (*Betula excelsa*) and graft on these. Even if it should prove less easy to graft on than *Betula alba* I would expect a decidedly better tree from it. It not only excels all our other birches in tall and majestic growth, but I think is more adaptable to a range of soils, particularly heavy soils.

For the Chicago prairie soil it would not be suitable. Perhaps the American white birch (*B. populifolia*) might endure



View through a bridge arch.

PROSPECT PARK, BROOKLYN, N. Y.

this soil, but it lacks other qualities. One lack is its being a short lived tree, while the yellow birch in the northern woods excels all its neighbors but the white pine and elm in noble growth, and endures for centuries.

I would like to add a note to the advice given by J. Wilkinson Elliott on fall planting of beeches. If they must be planted in spring, and it will generally be more convenient to do so than in fall, order them early and pot them and of course try to retard their growth in reason until they can be planted with the soil they are potted in. This will be found thoroughly successful.

Milwaukee.

C. L. MANN.

The cut-leaved birch is one of the handsomest trees in cultivation when it reaches a height of twenty feet or more unharmed. I did not want the tree condemned for planting in this section upon the results of my observations alone. As it is the aim and purpose of GARDENING to make thorough inquiries into all matters where a doubt exists, and then publish the results, I concluded to write to three gentlemen whose experience in tree planting along the north shore of Lake Michigan are well known, and attach their letters to this. Mr. Douglas' letter will be found quite interesting, inasmuch as it relates also to the dying out of so many of our forest trees.

I am informed that these birches die back in Toronto.

W. C. EGAN.

Your favor of yesterday received referring to the European cut-leaved birch. When the cut-leaved birch was introduced by Ellwanger & Barry (It originated in Germany and they bought the whole stock, as I understood it at that time).

I ordered six trees for planting in my ornamental grounds. When I received them I was so much pleased with them that I planted two of them on my own grounds and took two men with me and planted the other four, one in each of four of my friends' grounds, where they would show to advantage.

As I was not dealing in anything except evergreens and trees for forest planting, I never used but one tree after that, it was a birch seedling that came up accidentally in the shrubbery border. I took a bud from the cut-leaved and budded it myself, and that is the tree you refer to in your letter. (This tree is the best I've seen out west, but is getting weak at the top. W. C. E.) I planted it where you saw it growing. I went out this morning after reading your letter and measured the stump. At about 3 feet high it measured 16½ inches in diameter; it was a few years younger than the original six trees. I intended to measure the remains of the original six trees, but did not; their remains are now used to trail vines over. I think every cut-leaved birch over 20 years old in this vicinity has failed.

Now I think it but fair to take the Milwaukee man's side of the question on the next two pages, and let GARDENING see that you may both be right. The summer of 1893 was very dry in this locality. I remember when I went down to the World's Fair to meet Mr. Nicholson, of the Kew Gardens, at the close of our spring planting I felt discouraged at the dryness of the season but within a week we had a good rain in Chicago, but learned that it did not reach Waukegan. I wrote them that I would not return until they had rain. In about two weeks we had a powerful rain in the World's Fair grounds that left a perfect pond in front of the hotel on 60th street where I was boarding. I started for home, found it very wet until we reached Evanston, but it did not reach Lake Forest.

We did not get fall rains to the usual amount, and the winter came with the ground actually dry when we dug two feet below the surface. I tried to encourage our people by saying that we never had two dry seasons in succession as I had learned in about 50 years experience, but the summer of 1894 proved dryer than any previous one and we had a hundred and eight consecutive days commencing early in June and reaching into September without a shower, went into the winter dry, and thousands of oaks and other forest trees died with their lower roots in dust dry soil. The summer of 1895 was equally dry 103 consecutive days, commencing in June and ending in September. The result was that forest trees 40 to 50 years old died by thousands on thousands, but the rains

were plenty during the fall, and wet the ground below, where it had not even been dampened for three years.

Our city was noted by strangers for having more red maple trees than any other city; with a very few exceptions they are all dead. One remarkable thing in the forests was that the hickories and deep-rooting trees suffered more than elms and more shallow rooting trees. The oaks generally stood on knolls, while the elms being in the hollows received more moisture.

Now as to birches in particular, the canoe birch grows in considerable quantity in this vicinity and have died during the past three years, as never before. As this tree grows all through Wisconsin and north to Manitoba and west to Montana, if they have not died in and around Milwaukee it would seem as though they died here from extreme drouth. I understand that they did not have it so dry across the line in Wisconsin as to kill the forest trees.

ROBERT DOUGLAS.

I do not consider that the cut-leaved birch does well in the vicinity of Chicago, yet would not say cast it out altogether from our planting lists.

The best lot I can remember were those on Drexel boulevard, and long ago they commenced to die at top. I suppose they are gone now. I cannot now remember any others more than 15 or 20 feet high.

They do somewhat better in the lacustrine deposit in Milwaukee. You may find trees there 40 or 45 ft. high in good health, although you will also find those that are afflicted with the same trouble, dying at top. For one I would like to know something more about this disease. The trouble, whatever it may be, is sufficiently serious to preclude the use of the tree where absolute dependence on it is necessary for the effect intended.

J. A. PETTIGREW.

We planted quite a large number of cut-leaved birches about 1880 and they have nearly all died. At first I thought our very dry seasons caused the death of the tree, as the one planted on the edge of the pond remained healthy after the others had lost their tops, but finally that one went too. The direct cause of death in most cases was borers, of which we dug out a great many, but I think they would not have attacked the trees if the constitutions of the latter had not been weakened. The birches planted at Elmhurst have nearly all died. The failure of the cut-leaved birch has been so general in the vicinity of Chicago that for some years I have not recommended it for any important position. The best specimens that I have

known along the lake shore were in Winnetka. Betty Green's place had a fine one.

O. C. SIMONDS.

Nurserymen use *B. alba* nearly altogether for budding or grafting it on, though *populifolia* is just as good. The latter, as you are aware, is native to states from New Jersey to Wisconsin, and it doubtless existed of the hardiness of *alba* this one could be used, which would certainly ensure it. Nursery propagators here assert that clones of

a tree as the others. But its beautiful oval, pink colored pods in autumn causes it to be much planted. The Japanese one, *hypoleuca*, already mentioned, also has bright colored pods. *Grandiflora* is the lovely evergreen one of the southern states. An impression prevails that this species is far more tender than it is. This

Of the shrubby ones named the most of them attain an almost tree like size in time, but they commence blooming when but two to three feet high. *Conspicua*, *Soulangeana* and *obovata* have been known the longest. The first is the one with beautiful white flowers which expand as soon as spring weather comes. *Soulangeana* has pink flowers, and *obovata* purple, and these, too, flower in the same way. In fact all the shrub sorts bloom at the same time, some a little later than others, excepting our native one, *glauca*, which does not bloom till the close of May.

One of the smallest growers, but a beautiful and early blooming one is *stellata*, often called *Halleana*. Little plants but a foot high will bloom. The first warm days in April bring out the flowers, but they do not all open at once. A good sized bush will have flowers on it for perhaps three weeks, which is not the case with some, *conspicua* for instance, which drop their flowers altogether in a few days. The flowers of *stellata* have a pinkish tint in the bud and are white when expanded and semi-double and fragrant besides.

A great many of the magnolias sent out at different times, such as *Alexandrina*, *Norbertiana*, *speciosa* and *gracilis* are seedlings from *Soulangeana*—itself considered but a variety—or from *obovata*, which is the proper name for what most nurseries call *purpurea*. In some cases they seem so much like their parents, that it is difficult to tell them apart. It is possible for any one to get varying kinds



the cut leaves will not unite on the yellow or the sweet attempts having been made several times without success. Perhaps success may come to you through use of *populifolia* for a stock.

JOS. MEEHAN.

MAGNOLIAS.

As spring is the recognized time for the successful planting of magnolias a few notes concerning these universal favorites will be of interest to those contemplating planting some of them. Catalogues of the present day, which aim to instruct those who read them, mention that spring is the proper time to plant magnolias. This is correct, for in the case of some stubborn sorts to transplant, such as *acuminata*, I have known avenues of it, set out by experienced persons in the fall, with not a live tree in the lot when spring came. The shrubby sorts are not quite so difficult to handle, nor are quite small plants of the others. That small plants of *acuminata* and similar kinds can be set in the fall and not large ones, would indicate that failure must come from loss or mutilation of roots. Certain it is that in the way most all trees are dug and planted in the autumn, magnolias will not succeed.

For convenience of planters two divisions may be made of these, trees and shrubs. Those attaining the tree size are the following, naming those common in cultivation: *acuminata*, *Fraseri*, *hypoleuca*, *macrophylla*, *tripetala* and *grandiflora*. The most prominent ones, among the shrubby ones are *glauca*, *conspicua*, *Kobus*, *gracilis*, *Lennei*, *obovata*, *Soulangeana*, *stellata*, *parviflora*, and *Watsoni*, and varieties such as *speciosa*, *Norbertiana*, *Alexandria*, etc.

All the tree kinds named are natives excepting *hypoleuca* which is from Japan, and in many respects resembles our *tripetala*. *Fraseri* is of very large growth when in its prime. The flowers are of a light canary color, and are of sweet perfume, making it very desirable. *Tripetala*, or *umbrella*, does not make as large



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I do know and have convinced many others of its truth, that it may safely be planted about Philadelphia. I think there are two reasons why it is not thought hardy. The first is that like all magnolias, it wants unusual care in transplanting. The second is that being evergreen adds to the risk of moving it, and for these reasons it is apt to die. Do with it as with all other sorts, get all its roots and keep them fresh until soil covers them again, and in addition cut off every leaf, and prune it. Then mulch it in summer, to keep the soil cool and moist, and mulch it for the winter to keep the frost from the roots.

by sowing the seeds of any of the varieties, as seedlings of these are rarely just alike.

I have not found magnolias over-particular as to soil so it be good and moist or at least not dry. Plant them as soon as the ground has dried up nicely in spring, and do not spare the pruning of the branches.

JOSEPH MEEHAN.

Philadelphia.

SOME DESIRABLE SHRUBS.

It has occurred to me that to mention some of the desirable shrubs from the list of those not over well known, would be of assistance to those who wish to plant.



View in the "Vale of Cashmere."
PROSPECT PARK, BROOKLYN, N. Y.

Some that I intend to name are not new, but they are not among those found in every garden, though they well deserve to be. As it will be of assistance to planters to know the time of flowering, I will name the months in which they bloom in Philadelphia.

In April there are two that give us their flowers, *Amelanchier rotundifolia* and *Corylopsis spicata*. *Amelanchier* is a native, and this one, *rotundifolia*, is one of the dwarf sorts. Little bushes not more than three feet high are full of sprays of white flowers. The fruit which follows is ornamental, being of a red color, and it is edible as well. The *corylopsis* has pendent racemes of yellow flowers, not strikingly showy, but quite desirable, especially that they appear so early. Both of these shrubs bloom towards the close of the month.

Following these, in early May, there are these: *Cercis Japonica* and *Viburnum cotinifolium*, followed a little later by *Azalea amœna*, *Exochorda grandiflora*, *Pyrus arbutifolia*, *Vaccinium corymbosum* and *Xanthoceras sorbitolia*, and towards the close of the month by *Robinia hispida*, *Rosa lucida* and *Staphylea colchica*.

The rosy pink flowers of *Cercis japonica*, on the naked stems attract attention wherever the bush appears, and even after its blooming its shining green leaves are beautiful. *Viburnum cotinifolium* is a most desirable large growing shrub. It has large leaves, which well set off the corymbs of white flowers. The fruit which follows turns from green to red and from red to black, and often the three colors are to be seen on the one cluster of berries. It is of almost evergreen character.

Azalea amœna has small leaves, which are evergreen, and rosy pink flowers. The racemes of large white flowers of *exochorda* place it among the very best of shrubs. *Pyrus arbutifolia* is valued

for its bunches of white flowers and for its handsome black fruit in the fall. The *vaccinium*, too has pretty white flowers, and when autumn comes there is no shrub with handsomer scarlet foliage than it. *Xanthoceras* does not look a promising shrub in the winter time, but when its large white, crimson centered flowers expand, but few equal it. *Robinia hispida* is the old rose acacia, rarely seen, yet hardy, and lovely when its clusters of rose colored flowers are displayed. Its shoots are like those of a moss rose. *Rosa lucida* is one of the wild roses of Pennsylvania. The single pink flowers are lovely, but the display of its scarlet fruit, which lasts all winter, is just as attractive. *Staphylea colchica* is a bush which bears clusters of pretty white flowers, unlike those of any other shrub.

With the close of May the number of shrubs in flower lessens, but the following three are among the uncommon ones: *Andromeda Mariana*, *Azalea viscosa* and *Itea virginica*. These are all white flowered. Those of *andromeda* are large, waxy white, making one of the best of the genus, I think. The *azalea* is the late flowering one. There is hardly a set time for its flowering. In its habitat while some bloom in May, others do not flower until late in July. It is sweet scented. *Itea virginica* has upright spikes of flowers and it well deserves a place in a collection of shrubs.

In July the *Sturtia pentagyna* blooms. The large single white flowers it bears are very pretty. *Clethra alnifolia* comes towards the close of the month, lasting till August. Its finger-like spikes of white flowers are produced numerously, and they are quite fragrant.

I do not remember any shrub, of the class I am speaking of, for August, but the fruit of the *Berberis Thunbergii* and that of *Pyrus arbutifolia*, *Rosa lucida* and *Viburnum cotinifolium* already mentioned make a good display in this month.

September gives three desirable ones, *Caryopteris mastacanthus*, *Lespedeza bicolor* and *Vitex agnus-castus*. *Caryopteris* has lovely blue flowers. It belongs to the natural order *verbenaceæ*, so that the common name, "Verbena Shrub," seems much more appropriate for it than the misnomer "Blue spiræa," which some apply to it. *Lespedeza* is generally catalogued as *Desmodium penduliflorum*. Its drooping shoots, laden with rosy pink flowers, form a beautiful bush. *Vitex* exists in three colors, blue, white and lilac. These and *caryopteris* are the better for being pruned in closely with the advent of spring.

To close the list I will name for October *Callicarpa purpurea* and *Eleagnus umbellatus*, both mentioned for their berries. The *callicarpa* has long, partly drooping twigs, which are closely set with small purple berries, which last till frost. The *eleagnus* is known as the late ripening one. The berries are mottled red, ripening in October, and usually so thickly set along the branches as to completely hide them. Philadelphia. JOSEPH MEEHAN.

The Flower Garden.

OLD FASHIONED COTTAGE GARDENS.

In the February 1st issue of GARDENING (page 152), Mr. Egan speaks a word for the old fashioned cottage gardens, and having such a garden here, and knowing the pleasure there is in this style of gardening we heartily recommend it to all lovers of the beautiful; for that it is beautiful and interesting no one can dispute. Just compare a garden of this kind and a garden of more modern style. In the first named we have simplicity and beauty combined, in the other a complicated design of coleus or alternantheras; to some

it may look beautiful, but the beauty soon dies when it is seen too often; when seen once or twice the novelty is gone and we look for something new; in an old fashioned garden, if planted properly, this never happens as there is something new to be seen nearly every day from early spring till cut by frost in the fall and to those who have but a small garden at their disposal and who wish to

The German iris makes its appearance about the 15th of May and of these we grow many planted all over the garden in clumps. The spring bulbs being then on the wane the irises keep the garden gay till the roses come in June.

Everybody likes the rose; we grow nearly two hundred varieties and this spring will add a great many more of the newer kinds. The H. P. kinds are grown

show in themselves. This takes us past midsummer and the dahlias are now in fine flower and will last till cut by frost. Our last show of the season is of Japan anemones and hardy asters.

I have spoken of only a very few plants but these are the ones we grow the most of as we make an effort to have a big display at certain times throughout the summer, but all perennials and biennials worth growing find a place in the garden, and to make it more interesting we raise the most of our perennial plants from seed. We have some four thousand plants of last summer's raising planted in the reserve garden; these will mostly all flower this summer and make a fine display at little cost. This is a good way for amateurs to get up a stock of hardy plants as they are all easily raised from seed.

Lilies are one of our garden pets. We have some fifty varieties, some of the newer ones being added to the list last fall. They grow and flower nicely in the cottage garden, in fact better than in any other place we ever had them.

Garden annuals we raise in large quantities; 253 distinct varieties were used in the cottage garden last summer, and what a show they do make! As I said before spaces are left amongst the perennials and all these are filled with the annuals, in fact every nook and corner is planted and by the end of June not a bare spot of ground is to be seen in any part of the garden. This is how our cottage garden is planted, simple in arrangement, but the effect is beautiful and natural, which no other style of gardening could produce.

To the amateur who may like to try



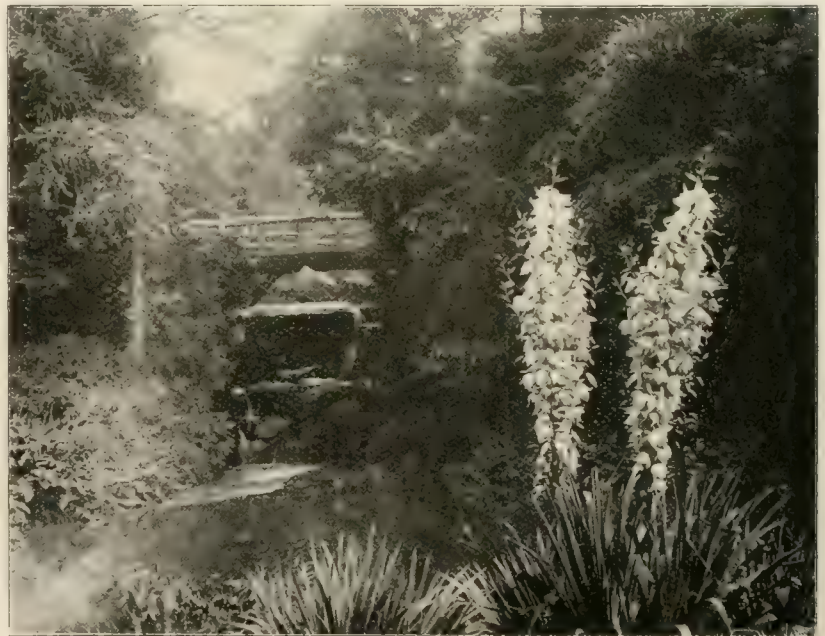
Rhododendron in bloom

make the most of it, they cannot do better than arrange their garden in this simple way.

We will give an outline of how our cottage garden was made and planted. Hardy herbaceous and bulbous plants are largely used, but a number of clumps of shrubs of a dwarf habit are planted here and there to break the view; this makes the garden more interesting as at every turn you take something new appears and this is what makes a garden delightful.

Beginning with the early spring-flowering bulbs, for of these we grow a great many in endless variety, for the choicer kinds of narcissus long beds have been made and raised about six inches above the level; here clumps of these have been planted, each variety by itself and all labeled, and when they are all in flower they are a sight long to be remembered. We plant each clump far enough apart so as to be able to put out the summer bedding plants between and in this way two crops of flowers are had from one bed. The choicer tulips are treated in the same way, the commoner kinds being planted all over the garden in clumps.

We also grow a great many other spring flowers which are not so often seen in gardens, such as the winter aconite, chionodoxas, fritillarias in variety, grape hyacinths, leucojum, ornithogalums, scillas, dog's-tooth violets, snowdrops and many others. The last named were nicely in flower March 1 and the winter aconite a day or two later, and from now on our cottage garden will not be flowerless. How many readers of GARDENING can say the same about their garden? If you don't grow any of these spring flowers you miss a great treat, for there is nothing in their season that is more charming and beautiful than a garden of spring flowers.



Water side planting.

PROSPECT PARK, BROOKLYN, N. Y.

in long prepared beds by themselves outside of the garden proper, while others are trained over arbors and over the gateways leading into the garden, and some of the half-climbing sorts are allowed to run wild into a tangle; they flower splendidly in this way and make a fine display.

The next important show is the Kæmpferi iris, delphiniums, foxgloves, Canterbury bells, sweet williams and the annual ten-weeks stock. All of these we grow largely, in fact enough to make a big

his hand at the formation of an old fashioned garden the following suggestions may be useful: Avoid mixing your plants; nothing looks better than a bold clump of each variety, as it is in keeping with your garden. Avoid as much as possible planting in straight lines; try to imitate nature as much as you can.

Mr. Egan refers to the nobility of England as encouraging this style of gardening. No doubt they help, but I think it is the annual exhibitions which are held in



View in the "Vale of Cashmere"

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every village and town from July to September. Within a radius of ten miles of my home in Scotland seven amateur flower shows were held. These shows are well patronized and the greatest rivalry prevails among the exhibitors. Why cannot we have such exhibitions in this country? Alas, not even the great city of New York can afford one. Some good shows have been given but they were financial failures. We will live in hope that gardening will improve and that the people will give more time and thought to the beautifying of their homes. Until that time we cannot expect to see many old fashioned cottage gardens. DAVID FRASER.

Mahwah, New Jersey.

PRIMULAS.

Mr. H. E. G. would like to know whether the so-called hardy primroses will stand our severe winters and also puts a few more questions, answers to which may be found below

Hardy primulas, like most all our herbaceous plants, are deserving of more attention than they have received hitherto. Some of them require but little care and do well year after year in ordinary garden soil, others are more delicate in constitution and must have a moist and shady situation, yet there should be no superfluous water around the roots at any time. The cold does not hurt them, but they suffer during the hot and dry weather in summer and fall. Among those which invariably do well without much extra care we may mention the pale yellow, *P. eliator*, which blooms in large many-flowered clusters; *P. vulgaris*, often called *acaulis*, of which there are numerous single and double varieties of various colors, is a low and very free-blooming sort, very desirable, the original form being pale yellow; *P. officinalis*, identical with *P. veris*, bears large more or less tall umbels, dark yellow with a lighter center.

P. variabilis is the species which we generally call polyanthus. They are sturdy growers and flower in large bunches for a long time in spring. In

color there is a great variety, ranging from light yellow to dark purplish and reddish brown in different shades; some are edged and laced with yellow, others are self-colored with a distinct large or small eye. The hose in hose varieties occur among these as well as in the last named.

All the above mentioned species and their hybrids will generally do well in any ordinary border, though they would probably improve under slight shade and protection from the midday sun; their flowers would last longer in perfection under such conditions. A well drained soil is essential for their welfare, therefore a northern aspect in a rockery, on a terraced bank, or a situation on the north side of a building with a slightly sloping ground, would furnish an admirable place in which to grow the rarer and more delicate species

We have grown *P. cortusoides Sieboldii* which Mr. G. with many others calls plain *P. Sieboldii*, for years on the north side of a rockery with good success. The plants start into growth rather late in the spring and are without any leaves in winter. The roots are creeping and travel a considerable distance, so that special care must be exercised not to disturb them when cleaning up or loosening the soil in spring or autumn. They bloom in umbels of 5 to 10 flowers, color deep rose with a white eye and the under side of the flower is darker; they vary in color though, for we often find much lighter shades among them. *P. auricula* can easily be grown in a cool situation. A great variety of colors are represented in these and they are among the prettiest of the genus, nearly everybody is familiar with them. *P. rosea* has stout upright flower stems terminating in a cluster of rather large bright deep rose flowers but requires shade and cool soil; where such a position can be provided all hardy primulas may be successfully cultivated; the lovely red *P. siberica*, the delicate lilac *P. s. Kashmiriana*, the little yellow *P. floribunda*, *P. denticulata* with its dainty lilac whorls, the rosy purple *P.*

viscosa, the snow white *P. nivalis* and many more may find a congenial home here and I even would not hesitate to try those of a more delicate constitution like the beautiful violet blue *P. capitata*, provided, however, that the air can play freely and unobstructed around the plants and they are protected from the burning sun at all times; the cold never hurts them under these conditions.

Under the milder sun of northern European countries primulas succeed far better than with us, although even there some varieties require shady position; many of the rarer kinds are there wintered in cold frames, not because they are unable to endure the cold, but for fear of too much moisture; with our dryer atmosphere we can safely leave the plants out all winter; what bothers us is the dry heat in summer.

There are but few commercial establishments in this country where primulas are grown in variety and Mr. G. may have to try several firms if he wants the rarer kinds, while ordinary border varieties can be furnished by most any of our larger establishments.

J. B. K.

VARIOUS QUESTIONS FROM "E. M. G."

The following questions have been referred to me:

1. "Have you any knowledge whether the new Climbing Meteor rose will winter in a sheltered place with good protection?" It would need so much protection and then with doubtful results that it would not be worth trying out of doors north of Washington, D. C.

2. "When is the correct time to prune moss roses? Some claim before flowering, others after flowering?" The month of March or early April is the best time to prune moss roses. You can then see if there has been any winter killing. Don't prune as hard back as you would the ordinary hybrid perpetuals.

3. "Can you give a list of six or twelve best bedding geraniums, new varieties included—such varieties as are generally continuous bloomers?" Six good geraniums for bedding, but not new, are Emile

de Girardin, double pink; Ernest Lauth, double, amaranth; F. S. Raspial, double scarlet; S. A. Nutt, double dark crimson; La Favorite, double white; Mrs. E. G. Hill, single pink, fine. Six newer varieties which are very fine are Mrs. J. M. Gaar, finest white, single; L. Swartling, single scarlet shading to salmon; B. Schroder, rosy pink; La France, double white; Prince Henry of Orleans, double rose pink; N. Castolina, double red. The three last named are new and grand varieties.

4. "Also a list of six or twelve dahlias, double, variety of color, early and constant bloomers." The following ten varieties are all of the large flowered double type and embrace all shades: Ethel Vick, Constancy, Lady Allington, Oriole, Ronald, Sunlight, Yellow Standard, John Walker, James Stephens, Fanny Purchase. WM. SCOTT.

VINES FOR VERANDA DECORATION.

To any lover of nature there is always a charm about a vine-clad bower, be it that of a secluded summer house, a shady nook in the woods, or a well clad veranda. Luxuriance of growth is always essential, as the step from the sublime to the ridiculous is but a short one.

The selection of the proper vine is the most important move towards success; climatic conditions in the immediate neighborhood must be favorable to the subject chosen. There must be no setback from lack of hardness to curtail the onward growth, as there must be no gaps in the canopy of verdure. Having been guided by the experience of our neighbors or the knowledge of experts, and chosen one vine, we must prepare for its reception.

Let us stop and think a moment. What are we going to demand of these strangers we are bringing to our home? We are going to request them to embower our veranda with a luxuriousness of foliage and a mass of flowers. We want them not only to do it one year, but for many years, in fact within the narrow space of our lives we want it forever.

Could the vine reply it would say: "Yes. I can do all that, but you must bear in mind that for every leaf I bear, for every perfumed flower I bestow upon you, I must take from the earth just so much plant food. The earth is my bank, and the rich soil therein my bank account. If you will make, and maintain an adequate deposit for me and furnish me with sufficient moisture, for water is the check by which I draw my funds, I will fulfill your expectations and gladden your heart."

We would like to have a plant talk to us that way for we then would always remember that in planting any permanent tree, vine or shrub, they require wide, deep holes, filled with rich soil.

The subject of our illustration, showing the full length of veranda, fifty feet long, was photographed from a point of view that would show detail rather than produce an artistic picture (The house in full was illustrated in GARDENING a few years ago), and shows the full southern and part of the western exposure.

The openings between the posts average twelve feet, thus allowing plenty of light and air to reach the house windows. At the left of the down-spout the whole space of width of the porch (twelve feet) is entirely covered by the vine in order to shut out the late afternoon sun. In this vine screen, however, is an oval "window" or opening at such a height that one standing on the porch floor can look out upon flower beds. At the base of porch is



VINES FOR VERANDA DECORATION.

a bed of rich soil two and a half feet deep and nearly as wide. Had circumstances allowed it would have made it wider. This is well mulched in the fall with rotted manure, and several times during the summer it receives a thorough drenching with weak manure water, choosing an evening when the inmates are absent.

The main vine seen, particularly on the posts, upper portions and the end, is the Japanese *Akebia quinata*, a rapid-growing vine when once established, free from the attacks of insects, and withal one of the handsomest foliaged vines we possess. In warmer climates its foliage is evergreen, but here it is one of the first to unfold in the spring and the last in the fall to discard its leafage. It flowers early in the season, giving forth clusters of odd-shaped, small chocolate colored and spicily scented blooms, odd and curious but not showy. Some vines have fruited in America but none of mine have yet so favored me.

It is a twiner, not clinging by tendrils after the manner of the grape, and therefore should have rods for support. Here is an opportunity to warn beginners not to use wire netting for permanent vines of a *twining* habit, for the simple reason that the vine in its twisting, twining growth, may get a main stem in one of the sharp, narrow angles of the mesh when young and slender, and when maturing growth enlarges it there is no room for expansion, and strangulation ensues. Round galvanized iron rods one quarter of an inch in diameter, or ordinary iron, painted, should be used. Wire netting may be used for annual vines, but if twiners and of strong growth, they sometimes get caught.

On the porch illustrated the akebia is trained up the posts and across under the eaves. Between the posts is a porch railing. When the akebia had become strong enough to cover the posts well, new shoots from the bottom were carried across along this space, thus making the green back-ground complete.

The akebias are planted only at the foot of the posts. Between them, and about three feet apart, are planted various varieties of the clematis. *Thunbergia alata* is planted between the clematis and akebia, mainly to creep over and cover the ground, but some always find

their way up among the other vines, quite frequently flowering inside the porch, long after the frost has injured those outwardly exposed.

Varieties of clematis are chosen for each section so as to maintain more or less bloom all summer. The white bloom seen entirely encircling the first arch is the well known *Clematis paniculata*. One plant is set midway between the porch pillars. It had been cut back to within a foot of the ground the fall prior. As its growth extended it was carried straight up until reaching the railing, then one-half was carried each way to the right and to the left until it reached the pillars. It is too strong a vine to grow against the akebia, so a strong string was run from railing to the roof, parallel to and a foot from the akebia, and a similar string run across under the roof but below the akebia. On these strings the clematis was trained. After it sends out its blooming laterals it is then allowed to wander at will, it being too late to do much damage to the akebia.

Near the *C. paniculata* is a *C. coccinea* which was kept well down on the space between the pillars and produced its scarlet blooms in profusion nearly all summer. The sweet scented *C. vitalba* had been carried up the corner pillars, and in July furnished its fleecy wreath of flowers, and at about the same time the second pillar was covered with the wine-colored blooms of *C. viticella* var. *kermsina*.

This corner arch is the only one at which is planted the *C. paniculata*. Between the other arches I used mainly the hybrid large flowering forms. GARDENING for October 15, 1896, illustrates one panel covered with *C. lanuginosa*.

The single pillar illustrated shows the *C. flammula* planted to the left of the pillar and near the *Madame Edward Andre*, part of whose blooms may be seen. As can be readily observed the vines of *C. flammula* have been divided, thus allowing air and light between them for the akebia.

As it takes some time for any of the varieties of the clematis to grow up to any height, being cut back to near the ground each fall, and cut back as far as the railing when through blooming, but little injury is sustained by the akebia



VINES FOR VERANDA DECORATION.

from their presence. In this picture of the *C. flammula* the blooms of the thunbergia may be plainly seen.

When fall comes all the clematis are cut to within a foot of the ground and an inverted V shaped wooden trough parallel to the porch placed over them, and a good coating of manure put over the bed, troughs and all. This protection of wood is to prevent the snow swept from the porch from freezing and injuring the vines. W. C. EGAN.

SPECIMEN PLANTS ON THE LAWN.

Single specimen or dot plants on the lawn, in beds or among a large patch of low growing plants in the border, must necessarily possess some striking characteristics, either a bold habit in growth or foliage, graceful outlines, or some other pleasing and interesting or remarkable feature in their development. They should be clean and healthy in foliage and should retain a vigorous appearance throughout the season until late in autumn without showing any sign of decay in leaves or stems. In our hot and usually dry summers these plants are very apt to show the effect of drought if planted without extra preparation.

In a border where plants are massed together the defects in growth of the individual plants are hidden by the foliage and branches of their neighbors, but in the case of an isolated specimen every part of the plant is visible and therefore it should be as near perfection as possible. With a little extra care we can counteract the detrimental influence of our dry atmosphere to some extent by thorough

preparation of the ground and if necessary also by liberal waterings, but a good foundation of rich and open soil will nearly always produce the desired results without resorting to daily applications of water.

If a certain specimen plant is to be introduced in any part of the lawn an excavation of at least 2½ feet deep and 3 feet wide should be made, the bottom soil must be loosened and all the old soil carted away, filling up the hole again with the best of compost available, then we may reasonably expect success with the plant selected. Among the most effective plants used in Europe on lawns are the gunneras, which, however, are seldom seen here in the same perfection, owing principally to the lack of moisture and proper nourishment in the soil; on moist and rich ground, especially when partially shaded, they attain the same grand proportion here as there.

Gunneras have immense leaves 3 to 5 feet in diameter when well developed; the leaf stalks are very stout and stiff and in *G. scabra* are 3 feet or over in length and spiny. This grand plant grows about 4 feet high and a well developed specimen will often cover a circle 20 feet through. *G. manicata* attains even larger proportions under favorable conditions, as its leaves and leaf stalks both show a tendency to grow to a greater size than those of the first mentioned. It is only on very large lawns we can use these giant plants and probably for this reason we seldom meet with them; no doubt if they were better known more of them would be introduced for they are really

magnificent foliage plants. In our climate it is best to protect the roots in winter with a thick layer of leaves; what we call an open winter is hurtful to them, more so than severe cold with a good covering of snow. They should be planted in a sheltered position, where they are protected from strong winds, because the large leaves are liable to damage from this cause.

Winter protection is also advisable for the ferulas, else their roots might suffer in the same way; they are most elegant subjects for the lawn but should be planted in rather moist places; their finely divided large leaves are decidedly graceful in outline and are produced very abundantly; the flower stems should be removed as soon as they appear above the foliage. The plants grow freely when once fairly established and should not be disturbed for years. *F. communis* is perhaps the largest of the genus and produces a dense mass of large leaves which are divided and subdivided into narrow segments. Its height, exclusive of flower stems, is about 3 to 3½ feet, and it will cover a space of 12 to 16 feet square. *F. glauca* also is a noble plant, somewhat less in dimensions, but a good free grower; the foliage has a distinct glaucous tint on the under side; its height is about 2½ feet when flower stems are removed. *F. asparagifolia* has the leaves and leaflets divided into still narrower segments and is a smaller plant than either of those mentioned before.

Heracleum giganteum, the giant cow parsnip, is a grand plant when seen from a distance, but rather coarse on closer examination. Its large-sized pinnatifid foliage is roughly and deeply serrated at the edges; it may not possess much beauty generally speaking, yet from a distance its outlines are surprisingly effective, and for a large lawn I consider it a very ornamental plant, which moreover requires very little attention. Height about 8 to 10 feet when full grown, inclusive of the many-branched flower stems, the foliage attaining about half this height.

Centaurea macrocephala is a desirable hardy plant about 3 or 3½ feet high with oblong entire leaves 15 to 20 inches long; the edges are undulated and wavy; the flower stems are furnished with closely set leaves of same shape, but smaller in size; flower heads are deep yellow and large; it blooms during July and August. A robust growing species, worthy of a prominent place on the lawn, but may also be used in the border or as a dot plant in beds.

Of the acanthus family, *A. mollis* is perhaps the most ornamental species. Its broad leaves are roughly and deeply serrated, 10 to 12 inches wide and 1½ to 2 feet long; the leaves are not spiny as in *A. longifolius* and *A. spinosus*. Its flower spikes rise 18 to 24 inches above the mass of foliage in June and July. The plant should have the full benefit of sun and air, also an occasional dose of manure water in its earlier stages of growth. The flower stems of this bold looking plant should be removed, after flowering; its height is about 4 feet. There is a variety of it with broader and larger foliage, of taller growth, called *A. latifolius*, not quite so hardy and its habit not so compact, but nevertheless a vigorous grower and decidedly ornamental. In planting isolated specimens of acanthus, 2 or 3 good crowns should be placed close together, to produce the desired effect in the first year.

Some additional notes on this subject will follow for a later issue. J. B. K.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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IN THIS ISSUE we print ten engravings from photographs taken in Prospect Park, Brooklyn, N. Y., that will, we believe, be of very great interest to our readers. The accompanying article is written by one of the ablest landscape artists in the country and we heartily commend his broad view of what is most beautiful in park effects.

THE English Gardeners' Chronicle makes note of the successful moving of a purple beech with a girth of 9 feet 2 inches at the ground, 40 feet high and the branches having a diameter of 62 feet. The total weight moved was estimated at 30 tons, and the distance moved was 50 yards. Preparations are now being made to move an oak with a girth of 10 feet 2 inches at the ground, 46 feet high, diameter of branches 45 feet.

A FEW ISSUES back Mr. Joseph Meehan incidentally mentioned *Rosa moschata* which brought out an article by Mr. H. S. Hunnewell, particularly referring to its hardness. In this issue is another article from Mr. Blair, of Grand Rapids, Mich., on the same rose. GARDENING would like more of these articles, especially those relating to recent introductions of merit. The recording of the behavior of any new plant in the several sections of our country, where climatic influences differ, is of essential benefit to our readers, and we hope our subscribers will bear this fact in mind, and send us in any notes of interest.

WOODBINE.

In Ellacombe's "Plant Lore of Shakespeare" we find a delightful chapter on the woodbine and its application to plant nomenclature. In this work he treats the honeysuckle and woodbine jointly "because there can be little doubt that in Shakespeare's time the two names belonged to the same plant."

"Woodbines of sweet honey full."

We find that in the Anglo-Saxon vocabulary of the eleventh century it is applied to the wild clematis (*C. viticella*) "Weoden-binde," while in Archbishop Ælfric's "Vocabulary" of the tenth century it is applied to an ivy (*Hedera nigra*) "Wude-binde."

The name woodbine is often now in England applied to the *Clematis flammula*. In America it is sometimes used to designate our Virginia creeper, *Ampelopsis quinquefolia*, while in the Spanish West Indies the *Ipomea tuberosa* is known under that name.

The habit of the honeysuckle clinging to and twining round the branches and twigs of any tree or shrub near it, is thus alluded to by Bullein in "The Book of Simples," published in 1562.

Oh, how swete and pleasant is Woodbinde, in woodes or arbours, after a tender, soft rain; and how friendly doe this herbe, if I maie so name it, embrace the bodies, armes, and branches of trees, with his long winding stalkes, and tender leaves, opening or spreading forth his sweet Lillis, like ladies fingers, emog the thornes or bushes.

The berries of the honeysuckle are thus referred to by Calverley:

Round which a woodbine wreathes itself, and
 haunts
Her saffron fruitage.

THE ASPEN.

In poetic fantasticism the European *Populus tremula* is considered the emblem of "Lamentation." The tremulous motion of its leaves, even in a calm, has caused many a legend in fanciful explanation of the cause. The common name given the tree is aspen or aspe, although the early Anglo-Saxons knew it as "Quick-beam."

One of the earliest legends connected with it, and still vaguely believed by some in England to-day, is that the cross of our Savior was made from it, and in the disgrace it felt it has never ceased trembling. Mrs. Hemans thus refers to it:

Oh! a cause more deep,
More solemn far the rustic doth assign,
To the strange restlessness of those wan leaves;
The cross, he deems, the blessed cross, whereon
The meek Redeemer bowed His head to death,
Was formed of Aspen wood; and since that hour
Through all its race the pale tree hath sent
 down
A thrilling consciousness, a secret awe,
Making them tremulous, when not a breeze
Disturbs the airy thistle-down, or shakes
The light lines of the shining gossamer.

The Germans, however, while still associating our Savior with the tree, have a different version. Miss Darby in her "Lays of Love and Heroism" has translated a German legend in which

The Lord of Life walked in the forest one morn
 and the trees * * *
* * * bowed their proud heads at the sight of
 the Lord.

One tree, and one only, continued erect,
Too vain to show even the Savior respect;
The light giddy Aspen its leafy front raised,
And on the Redeemer unbendingly gazed,
Then a cloud, more of sorrow than wrath,
 dimmed the brow
Of Him to whom everything living should bow;
While to the offender, with shame now opprest,
He breathed in these words the eternal behest.

Alas for thy fate! Thou must suffer, poor tree,
For standing when others were bending the
 knee.
Thou'rt doomed for thy fault in atonement to
 pay:
Henceforth be a rush for the wild winds to
 sway.
Sigh, sport of their fury, and slave of their will,
Bow, e'en in a calm, when all others are still,

And shivering, quivering, droop evermore,
Because thou would'st not with thy brothers
 adore.

The weak Aspen trembled, turned pale with
 dismay,
And is pallid with terror and grief to this day.

The aspen is considered one of the primeval trees of Europe. Its nearest relative in America is *P. tremuloides*, of no great ornamental value. In England at the time of Henry V the wood was used for making arrows, and an act of Parliament was passed prohibiting its use for other purposes, with a penalty of an hundred shillings if used for making "pattens or clogs."

Some of the earlier writers were not as gallant as they should have been for we find them slandering feminine characteristics. In "The schoole-house of Women" in Hazlett's "Popular English Poetry" can be found this closing verse:

The Aspin lefe hanging where it be,
With little winde or none, it shaketh;
A woman's tung in likewise taketh
Little ease and little rest;
For if it should the hart would brest.

Old John Gerard must have been a married man, and thought best to screen himself behind the interposition "as the poets and some others report," when in closing his account of this tree he says:

"In English Aspe and Aspen tree, and may also be called Tremble, after the French name, considering it is the matter whereof women's tongues were made (as the poets and some others report) which seldom cease wagging."

NURSERYMEN'S CATALOGUES AS TEXT BOOKS.

Every spring the postman brings to our door the numerous catalogues of our enterprising nurserymen. Upon these a vast amount of thought and study have been judiciously spent, and within their covers are golden words of wisdom.

Upon your success depends in a measure the nurserymen's prosperity. Should you fail in your planting and become discouraged and discontinue it, they lose your further patronage. Should you succeed, you and your friends will want more stock, and thus their business increases.

They have had years of personal experience in their line and have mastered all the necessary requirements of successful planting. They desire to impart that knowledge to you, as far as possible to be done by words, that you may succeed, consequently we find in these catalogues chapters devoted to "Hints on transplanting, etc."

Thus in the catalogue of Messrs. Ellwanger & Barry, Rochester, N. Y., we find in their fruit department three pages devoted entirely to instructions covering the formation of an orchard, giving in condensed form all requisite methods of procedure, from the preparation of the soil to the proper manner of pruning and after culture. Four half-tone illustrations, not imaginary pictures but from actual subjects, are given, showing the stock as it looks when received and its condition when properly pruned for planting. These three pages are worth a great deal to an intelligent amateur who desires success and will follow out the instructions, for they contain the resultant wisdom of a century's experience.

The catalogue of Messrs. Thos. Meehan & Son, Germantown, Pa., is a most excellent one. They devote a chapter to "Hints on Tree Planting and Pruning" and another to the "Pruning of flowering shrubs," that are models of perfection and a library in themselves. These are illustrated by examples of pruned and unpruned trees and shrubs so plainly

delineated that the merest novice can understand them.

The Wm. H. Moon Co., Morrisville, Pa., as well as Samuel C. Moon, of the same place, and others follow the same rule.

When we come to consider perennials, the catalogue of Mr. Jacob W. Manning, Reading, Mass., is an encyclopedia of all that succeed in our climate. Not only are full instructions given regarding the preparation of the beds, either on the level or rockery, but with each species is given the height, time of flowering, and any peculiarities of culture, if necessary. The common and botanical name are also given. The introduction of half-tone reproductions of actual specimens is a welcome innovation, and a valuable addition to all up to date catalogues.

IN FRANCE experiments have been made in planting cannas in baskets filled with soil, and the basket then placed in vessels of much larger size to a depth that the rim and the soil is barely submerged. The roots pass through the basket. This method is said to produce very luxuriant foliage and an abundance of flowers.

The Greenhouse.

A SMALL GREENHOUSE.

A rough sketch for a small greenhouse is referred to me for opinion and comment. It is designed for summer use. Without discussing at any length the plan proposed by "Subscriber," from Lindsay, Ontario, would say that I do not approve of the plan. It is too complicated, and on another plan can be built to cost less and be more serviceable. Our friend at Lindsay will say: "If you condemn my plan you must suggest something better." I am willing to do that and trust it will meet with approval.

First, for summer use a house whose ridge runs north and south is much better than one running east and west. If the house were used in winter for forcing flowers I would say different, but for summer use by all means let the house face east and west and its length run north and south.

Seven feet is a most awkward size and expensive to build for the bench room you get. If it must be small let the width be 10 feet from outside to outside of posts. This will give you a path of 2 feet 6 inches and two benches of 3 ft. 3 inches on each side, or you can make the path only 2 ft. wide, which will add to the benches. Four feet six inches is a good height for post above ground and let the roof be equal span. There is nothing like plenty of ventilation, and 2 feet deep from the ridge and at least one-half of the length of house, should be ventilation. If the prevailing winds are from the west then put your ventilation all on the east side and you will find that is sufficient. Shelves can be placed on brackets on the posts near where the roof springs. Any further points will be cheerfully supplied.

WM. SCOTT.

GREENHOUSE NOTES.

The busy season of the year is with us again and there is much to do. If the annuals for the decoration of the flower-garden have not been sown they should be seen to at once. We put our first sowing in on the 1st of March, and another will be put in about the 1st of May for a

succession. They take up a lot of room in the greenhouse but if plenty of cold-frames are handy a great many plants such as violets, geraniums, carnations, ageratums, etc. can now be put in them; but it is well to have plenty of covering handy so as to take no risks on cold nights. After the annuals are once transplanted and get a little start, they also can be put out in the frames and the plants will be harder for the change.

Cannas can now be started in pots or boxes. Some prefer to plant out the dry roots, but our summers are so short that it pays to give them a start, as in this way you can have the effect at once.

Gloxinias, tuberous begonias and achimenes can now be potted up. We like to start them early so as to have flowers from May on. The seedlings of this spring will flower in late summer and in this way a show of flowers is to be had in the greenhouse as well as in the garden.

English melons can now be sown, to be grown for an early crop in the greenhouse. They are very easily grown and quite interesting. The same may be said of the English cucumbers.

Mahwah, N. J.

DAVID FRASER.

VIOLA ODORATA.

"How shall I treat seeds of *Viola odorata* to get them to grow?" There is no particular difficulty in raising plants of the above if you have good seed. The pansy (*V. tricolor*) is one of the easiest of seeds to raise. I would not advise trying to save seed of the violet before end of March or early April, for in a low temperature they may not be fertilized, but when plenty of ventilation is on they would be sure to be.

Sow thinly in a flat and cover the seed only enough to hide it from sight. When two leaves are formed transplant into a frame or box, four inches between plants, where you can cover with shading during the hottest hours of the day. By September you will have seen most of them flower and know whether you have produced an advance on existing kinds or by the ever recurring law of reversion they have gone back to their first ancestors.

WM. SCOTT.

PILOCEREUS SENILIS.

From "C. O. F." comes the inquiry: "I have an ill-shaped *Pilocereus senilis*. Please tell me if I can propagate it to secure better shaped plants and how?" The *Pilocereus senilis* is a long growing cactus, and although grotesque in appearance is hardly worth growing except as a curiosity. A good authority says, "It seldom or never flowers in cultivation." To produce a better shaped plant cut it off within a foot of the pot or tub it is growing in and it will most likely send out lateral shoots. Keep dry till it shows signs of breaking. WM. SCOTT.

GREENHOUSES IN TEXAS.

In the March 1st issue of GARDENING J. N. S. asks for advice in carrying plants through the summer in our trying climate. This is one of our most serious obstacles in the way of successful floriculture. With the thermometer ranging from 95° to 105° in the shade and a hot dry wind withering all tender vegetation, one must have lots of patience, vigilance and a thorough love for flowers to keep them in a growing healthy condition.

If in a conservatory potted plants should be plunged, nearly to the top, in sand, soil or Spanish moss or something

[CONTINUED PAGE 204.]



Fine Fruits

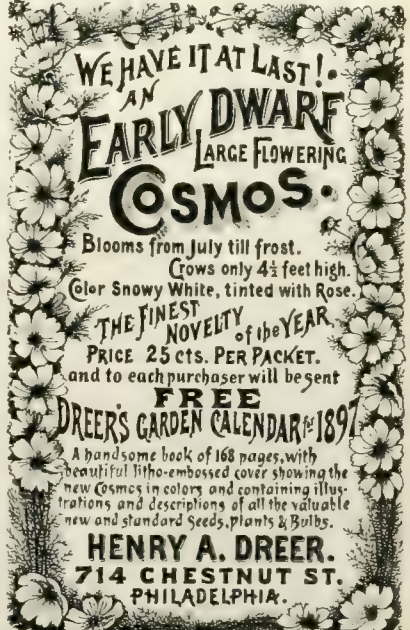
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of the kind to preserve the moisture, for a porous pot in an exposed position will dry out very quickly in such weather. The glass should be shaded with something to break the direct, fierce heat of the sun; a very good plan is to take plasterer's laths and nail them together in squares with spaces of about an inch between; these are light and can be laid on or removed as it becomes necessary. Give as much ventilation as possible without allowing the hot wind to blow directly on the plants; water frequently and spray the walks, walls and under the benches twice a day; in a word try to keep a moist atmosphere at all times. Classify your plants; your begonias and palms will need more shade and moisture than your geraniums and cacti, so place them accordingly.

For a "grass" for an indoor aquarium I would prefer *Cyperus alternifolius* to *Papyrus antiquorum*, as it is a smaller and neater growing plant for indoors.

I don't think J. N. S. will find a water lily with all the requirements mentioned. *Nelumbium speciosum* (the lotus) will fill the bill with the exception of continuous blooming. *Nymphaea zanzibarensis azurea* is the most persistent blooming water lily in our pond outdoors which is heated by hot water, having bloomed all summer, occasionally through the winter and now (March 7) has four open blooms.

Austin, Tex.

A. J. SEIDERS.

Roses.

ROSA MOSCHATA.

Referring to Mr. Meehan's article in your issue of March 1st, headed *Rosa moschata*, and to the letter of Mr. H. S. Hunnewell therein quoted, allow me to say that I have tried the *Rosa moschata nivea* here and find it perfectly hardy without any protection except shelter from north and west winds afforded by my house. My plant, like Mr. Hunnewell's, came from the Shady Hill nurseries—an extra strong plant set out in November, 1894. It bloomed profusely in 1895 and 1896, making very strong growth in 1895; slightly less strong, I fancied, last year. It is not cut back by frost beyond a very few inches even on new shoots if well matured. It is close to the house on south side and suffers in summer some from red spider. It has encountered spells of zero weather of several days' duration and shorter snaps of several degrees below zero—much colder weather than it would encounter in Massachusetts or Pennsylvania. It is a very desirable and beautiful rose.

C. B. BLAIR.

Grand Rapids, Mich.

The Fruit Garden.

STANDARD PEARS FOR THE GARDEN.

Although it is well known that the behaviour of a pear tree as regards its growth and the flavor of its fruit is regulated to some extent by the situation in which it is grown, there are some kinds which do well generally wherever they can be grown.

I am about to give a list of a few which do well here, and I think they would satisfy any one who might plant them. I will place them in the order of their ripening in this vicinity.

[CONTINUED PAGE 206.]

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The large waxen looking fruit of Howell is attractive and of very good quality, and it too can be gathered gradually from the tree. Seckel, though of small size, leads all the rest for flavor, and next to it for excellence of flavor, comes the Sheldon, in my opinion. Neither of these two is beautiful looking, as so many of inferior taste are.

Both Anjou and Lawrence are early winter pears here. Contrary to what occurs in many places Anjou ripens before the Lawrence in this vicinity. I have known the whole crop to be gathered and used before the Lawrence were ripe. The latter kind hangs on until early November, being gathered only to escape freezing weather. By the way, it is an excellent quality of this variety that its fruit hangs tenaciously to the tree, defying storms to a much greater degree than the Anjou or any other of the kinds named. Josephine of Malines is a pear of good quality, and a good keeper.

There are many other sorts of pears which have quite a reputation among orchardists, but which I have not found as good for home use as those named. These are some of them: Flemish Beauty, Kieffer, Louise Bonne, Tyson, Boussock, Clairgeau, and Superfine. No doubt location has something to do with this, as some of them are very much praised. The Tyson is placed in the second rate list because of its tardiness of bearing. Young trees will sometimes grow for ten years without bearing a fruit. A Bartlett or a Clapp's Favorite will have given some bushels by that time.

I have had in mind while writing standard pears, as being the more desirable in the long run. But dwarfs give fruit earlier, and if they are set below where grafted when planted they root from the pear in time and become standards and more lasting than when relying wholly on the quince root on which they are grafted.

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Miscellaneous.

MISCELLANEOUS NOTES.

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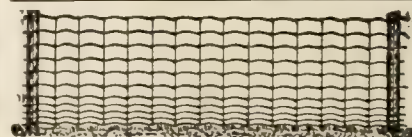
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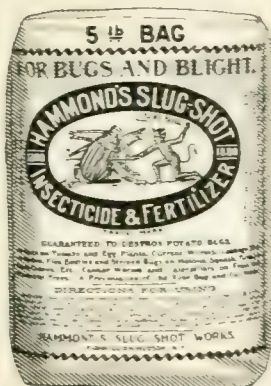


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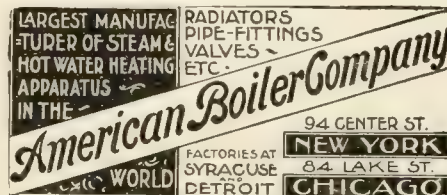
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GARDENING

Vol. V.

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CHICAGO, APRIL 1, 1897.

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No. 110.



A ROSE GARDEN AT WOOD'S HOLL, BOSTON, MASS.

Roses.

A ROSE GARDEN AT WOODS HOLL, MASS.

Our illustration gives a view in the rose garden of Hon. J. S. Fay at Woods Holl, Mass. Mr. Fay's roses and their grower, Mr. M. H. Walsh, have become famous through the exhibitions of the Mass. Horticultural Society, where for several years they have distanced all competitors in the classes for which they have been entered. Rose fanciers who have visited this beautiful place during the rose season have been filled with astonishment at the wonderful luxuriance of growth and perfection of bloom displayed and found here, an unequalled opportunity for seeing all the leading varieties at their best, and thus judging of their comparative value.

The climate is very mild and many varieties stand the winter here without injury which in the vicinity of New York and localities even farther south would require considerable protection. The conditions are very similar to those prevailing in parts of England where outdoor roses are grown to a perfection unknown in this country outside of the favored section about Woods Holl. Not all of it

is in the soil and climate, however. Mr. Walsh himself is a potent factor. He is a careful, studious and discriminating cultivator and loves the rose as one must in order to achieve great success. As a hybridizer also his skill has been proven and from his efforts have resulted the finest hybrid remontants ever originated in America.

THE CLIMBING ROSE, GLOIRE DE DIJON.

Referring to what you say in the issue of March 15, of the interest my mention of *Rosa moschata* excited, I would say that I received a letter from one of your subscribers in Washington, D. C., saying the rose did splendidly with him.

My object now is to call attention to the good old climbing tea rose, Gloire de Dijon. All rosarians know this rose, but I am satisfied that but few of them know what a hardy rose it is, or it would certainly be more used than it is. I can say without any reserve whatever that for the vicinity of Philadelphia it is perfectly hardy. It is true that in a measure all tea roses are hardy here, that is if protected a little about the roots all are, and many are without any covering whatever. But in this rose, the Gloire de

rose, perfectly hardy, and which produces its light salmon colored flowers from June till November.

In view of the fact that there is no other climbing rose known hardy enough for this locality, I am satisfied that many will be glad to know what I have said. The one about my own porch has passed through three winters with not an inch of growth injured, and it is too, on the southern end, which is deemed the worst position of all for plants liable to injury. Last season there were but few days from June till November in which no flowers were open, the last bud expanded on November 10th, and other buds were prevented from unfolding by freezing weather setting in. I have but little doubt that this rose could be grown without protection considerably north of this.

In England, as I saw two years ago, this is every one's rose. Its appearance supported to the walls of dwellings, is universal. And it is a great favorite in their cemeteries. Many of the lots are enclosed with railings, as they are here, and a plant of this rose is set at the center of each railing and the rose then trained espalier shape to form a hedge. I was fortunate enough to be at one of these cemeteries when the first crop of flowers expanded in mid June, and the

lots seemed enclosed in a low hedge of rose flowers.

I find this rose needs pruning much as other running roses do. The strong shoots of last season should be preserved as from each dormant bud on them will come the shoot to give the first flowers. And like other climbers its best growth is on the top, and it needs wise pruning to

drooping character, the central shoot of which still ascends. The cut-leaved weeping birch and the weeping dogwood represent this class. Then there are those which are usually grafted on tall stems and which practically get no taller, the branches drooping at a more or less acute angle to the ground. There are representatives of this class in Tea's mulberry,

some years ago under the name of *Parmientieri* seems to be the same as *argentea* unless it be perhaps of rather stronger growth. These weepers are formed by budding or grafting on a strong stock, preferably our native one, *americana*. Being of a strong growth this, the weeper, should be worked on a stem not less than 9 feet in height, which is about the height of the one represented here. The branches push out almost horizontally at first, drooping but little until the second or third year. The smaller twigs are more pendulous than the larger ones. It will be conceived what an excellent arbor such trees make. Nursery grown trees are sometimes met with which are grafted on stocks no more than six feet in height. Such trees are not nearly so useful as taller ones. The lesser height may do for less robust growers, such as the mulberry and the Kilmarnock willow, but the ash, the elm and the linden must be worked on taller stems.

Two summers ago, when in England, I was much pleased with the many drooping elms met with on many public grounds and in cemeteries. The sort used seemed to be a variety of our native *fulva*. Being mostly grafted at a height of about ten feet from the ground, they had formed splendid heads, and the branches swept the ground. Persons standing within the canopy were entirely shut out from view.

Referring again to the propagation of the linden, grafting should be done as soon as the buds show signs of swelling, and budding towards the close of summer, before the sap ceases to run. Two grafts or buds to a stock is better than one, a more even head resulting.

Philadelphia.

JOSEPH MEEHAN.



SPIRÆA VAN HOUTTEI.

keep sufficient shoots for flowering near the ground. JOSEPH MEEHAN.
Philadelphia.

Trees and Shrubs.

SPIRÆA VAN HOUTTEI.

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At its time of blooming in May a well grown specimen presents a charming sight. Every pendulous arching branch is so completely covered with small white flowers, that at a distance but little foliage can be seen, so well covered is it with blooms. It should stand alone on the lawn with plenty of room around it that its pendulous habit may be fully seen.

When through blooming it should receive good pruning, cutting out considerable of the oldest blooming wood. This will induce vigorous new shoots that will bloom the following year. While it enjoys an open sunny position and good cultivation, it does fairly well in half shade.

The specimen illustrated is on the grounds of Mr. M. Neville, Pelham, Wellingbourne, Va.

THE WEEPING LINDEN.

Planters find the various kinds of weeping trees of great use to them in their landscape work. There are those of



WEeping LINDEN.

Kilmarnock willow, ash, cherry and many other sorts, as well as in the linden. Of the latter we present an illustration of an exceedingly fine specimen in Prospect Park, Brooklyn, N. Y. There are but few finer specimens in this country than this one, and readers can see how nicely it fits the position it occupies.

The most of the weeping lindens in this country are of the variety *argentea*, called *alba* in most nursery catalogues. One of this character coming here from France

THE CUT-LEAVED BIRCH.

I think that the recent discussion regarding the failure of the cut-leaved birch as a permanent ornamental tree in the region bordering Lake Michigan from Chicago to at least as far north as Waukegan, may be misleading in that the want of hardiness or ability to stand the degrees of cold prevailing during our winters, might be inferred as the chief cause. I do not consider that the cause when viewing that feature in the same light



THE UMBRELLA TREE

that we would when questioning the hardiness of a tea rose, or any semi-hardy tree. There are some trees and shrubs that are quite tender when young, making a more vigorous growth than they can ripen sufficiently to stand the cold subjected to, that when sobered down by age make less annual growth, ripen it and prove hardy.

In the case of young cut-leaved birches, all seem hardy even out to the terminal buds. Under these conditions one would not look for them to develop any degree of tenderness as they advanced in age. Undoubtedly this tree is hardy in other sections as cold in winter as here, and probably colder. It was this feature of the question that has caused me to open the subject again, as I feared that some intending planters in similar climates as regards winter temperature might discard it.

It is a question in my mind if the soil plays any part. At Waukegan and Highland Park it is a yellow clay loam. At Graceland, where Mr. Simonds had his experience, and at where those Mr. Pettigrew mentioned were planted, it is decidedly sandy and I think that the soil at Elmhurst is still of a different character. I imagine that the cold winds from off our lake in the spring exerts some unexplained influence, an influence that young and vigorous birch trees seem able to combat.

I have noticed that where careful culture is given they hold their vigor at the top longer than neglected specimens. We often have late cold winds from the lake that even defoliate native oaks. Some coming earlier often injure the leaf buds if preceded by a warm spell, but as far as I have noticed the young cut-leaved birches escaped much damage. As yet I

cannot attribute the failure of this tree to the degree of cold they have to endure here.

W. C. EGAN.

Chicago.

THE UMBRELLA TREE.

Our illustration represents a very beautiful specimen of the Umbrella China Tree (*Melia Azedarach* var. *umbraculifera*).

The China tree, or Pride of India, as it is sometimes called, is a common shade tree in the southern states, especially in towns and cities, and it also is widely grown in the West Indies and southern Europe. As its name implies it is of Asiatic origin, but it now is widely naturalized wherever grown in this country. It is not hardy in the northern states.

It belongs to the same family of plants as does the mahogany and although not a tree of great proportions, seldom attaining a height of more than 40 feet, it is very fast growing and it is easily raised from seed. The common China tree has rather an open habit, but the form here illustrated and known as the Umbrella China tree has an exceedingly dense head and not only is it the most desirable of all melias as a shade tree, but one of the best shade trees of any kind. It originated in Texas and is often known as the Texas Umbrella tree.

Apart from these melias being fine shade trees they are exceedingly free blooming, bearing large panicles of fragrant lilac colored flowers early in spring. One variety in particular, namely, *floribunda*, is highly desirable for its flowers. It is of somewhat dwarf, compact form and its flowers are larger and whiter than those of the common China tree and it blooms when quite small, indeed it is often grown as a pot plant in northern conservatories where its delightfully fragrant flowers are

muchesteemed. They are of no use for cutting, however, as they wilt so soon after being severed from the plants.

The foliage is smooth, deep green, twice pinnate, ovate and pointed toothed leaflets and is quite suggestive of the leaves of *Koeleruteria paniculata*.

Landscape Gardening.

PLAN FOR A COUNTRY PLACE OF TEN ACRES.

The country house and grounds of which the accompanying plan will give some idea, are situated about 30 miles north of New York on one of the chain of lakes from which the city draws its water supply. It is a region of high rocky hills, rich pasture lands and broad stretches of forest encircled lakes.

In working out a fitting landscape design in such a locality the dominant motive in the treatment of ground surfaces, drives and plantations has been to accentuate the expression which these surroundings convey, and to increase the apparent breadth and extent of the home grounds proper.

The house is situated on high ground which slopes away gradually to the right and somewhat more rapidly in front and to the left, the level at the street being about ten feet below that of the foundation, and the lake (300 yards farther) ten or fifteen more.

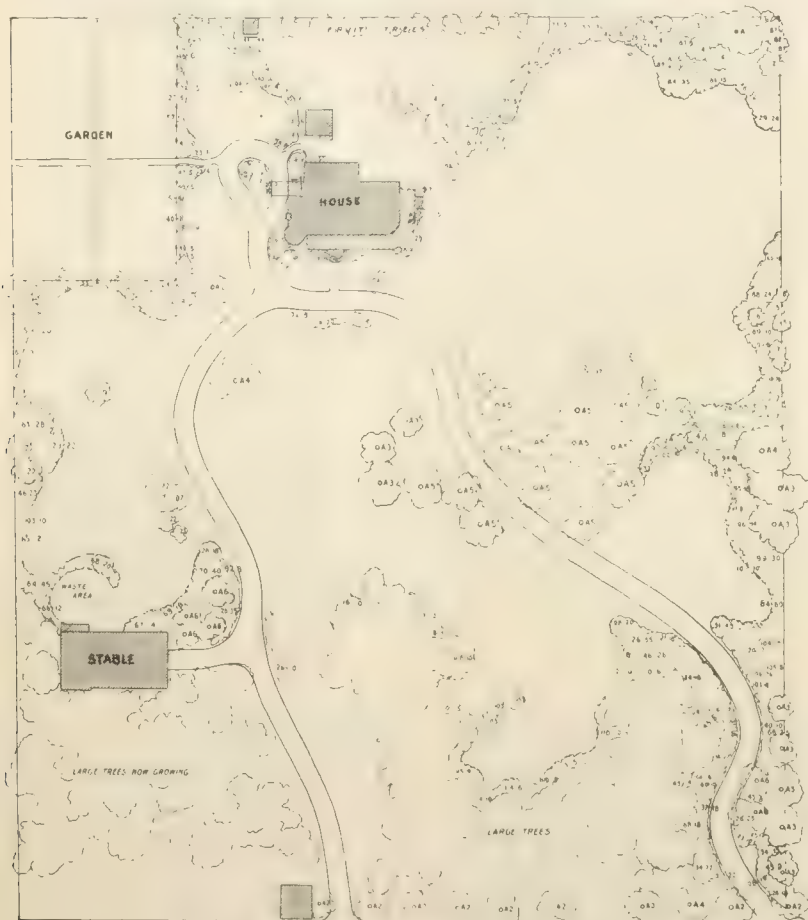
The driveway is rather compelled to its somewhat circuitous course at the entrance, its location being determined by the only opening through the heavy clump of large trees. For the rest it makes no attempt at balance of parts, in this respect in keeping with the unconven-

tional and picturesque surroundings. An apparently better location, more to the left for the exit, is impracticable owing to the uneven character of the ground at that point.

A number of clumps and scattered individual native trees were already growing. The contour of the clumps where stiff and hard has been changed by cutting and the exposed trunks of trees concealed by new plantations, notably in the case

growing shrubbery and vines close against foundations, make this location seem the only one on the place where the house would look its best.

From the house to the right is a broad expanse of lawn, with bordering trees and shrubs coming close down to the turf, beyond a middle distance of meadow land, still farther—for background—a fine clump of oaks and chestnuts. Directly in front is a glimpse of the lake with sloping



PLAN FOR COUNTRY PLACE OF TEN ACRES.

of the inner side of the large clump at the front and on both sides of drive at the entrance: the scattered trees where poorly located, cut down or transplanted, and in every case connected with adjoining plantations to avoid all appearance of spottiness and to present a harmonious and united whole.

The entrance drive first passes through some very interesting massed shrubbery seen to best advantage in detail at close range and selected with a view to its adaptability to partial shade. On emerging from the subdued light of this close undergrowth and over hanging trees, an outlook of a very different character is shown where full sunlight, broad stretches of lawn and a vista diagonally across the whole extent of the grounds make a pleasing picture; and as the house is not yet visible gives an impression of a large estate.

After passing the clump of native thorns a scene is presented in which the house is first seen, and from the point of view from which it shows to best advantage. Everything here is subordinated to and made to harmonize with the house; the background of large trees, the broad lawns at front and side, the clumps of low

shore and vegetation down to the water's edge. Just past the left of the stable is another and different view of the lake with rocky shores; the intervening planting is of low growing varieties thus giving an unobstructed outlook.

The lower part of stable is completely concealed and in such a way that access may be had to the rubbish heap, a necessary adjunct to any place large or small. The drying yard at rear of house is arranged in same way; also the gardens, and an interesting detail made of the fence with vines and shrubs in front.

The planting throughout, except in the immediate vicinity of the house, is very largely composed of the native arborescent material that might be found in the adjoining woods and meadows; and yet in its disposition and arrangement there is evidence of design at every point. In this, what may be called the naturalistic rendering as distinguished from that in which an attempt is made to imitate nature, it seems to me, is to be obtained, for civilized beings, the most fit and therefore the most pleasing and satisfying landscape effects.

CHARLES N. LOWRIE.

New York City.

KEY TO PLAN.

Where the letter A precedes a figure it signifies that the tree was already there before the plan was made.

A 1 hickory, A 2 Am. elm, A 3 maple, A 4 white oak, A 5 thorn, A 6 Norway spruce.

- 1 Cornus florida.
- 2 Cornus mas.
- 3 Fagus ferruginea.
- 4 Liquidambar styraciflua.
- 5 Cercidiphyllum japonicum.
- 6 Cercis canadensis.
- 7 Crataegus coccinea.
- 8 Quercus rubra.
- 9 Pyrus sorbus.
- 10 Chionanthus virginica.
- 11 Pyrus coronaria.
- 12 Pyrus floribunda.
- 13 Crataegus var. Paulii.
- 14 Liriodendron.
- 15 Magnolia cordata.
- 16 Magnolia tripetala.
- 17 Magnolia macrophylla.
- 18 Fraxinus americana.
- 19 Fagus var. heterophylla.
- 20 Acer rubrum.
- 21 Betula alba.
- 22 Betula lutea.
- 23 Spiraea Thunbergii.
- 24 Aralia spinosa.
- 25 Spiraea callosa alba.
- 25 1/2 Spiraea bumalda.
- 26 Rosa rugosa.
- 27 Clematis paniculata.
- 28 Rhodotyus kerrioides.
- 29 Kerria japonica.
- 30 Calycanthus flor.
- 31 Berberis Thunbergii.
- 32 Kerria jap. var.
- 33 Clematis coccinea.
- 34 Forsythia Fortunei.
- 35 Hypericum aureum.
- 36 Lonicera tartarica.
- 37 Symphoricarpos vul.
- 38 Symphoricarpos racemosus.
- 39 Syringa vulgaris (named varieties.)
- 40 Lonicera Halleana.
- 41 Akebia quinata.
- 42 Clematis Jackmanii.
- 43 Clematis Henryii.
- 44 Ampelopsis quinquefolia.
- 45 Ligustrum ovalifolium.
- 46 Cornus alba sang.
- 47 Cydonia japonica.
- 48 Berberis purpurea.
- 49 Desmodium penduliflorum.
- 50 Cornus elegantissima.
- 51 Pyrethrum uliginosum.
- 52 Pavia macrostachya.
- 53 Deutzia crenata.
- 54 Spiraea Van Houttei.
- 55 Spiraea callosa.
- 56 Tecoma grand.
- 57 Lonicera sempervirens.
- 58 Spiraea prunifolia.
- 59 Paeonies.
- 60 Hydrangea paniculata grand.
- 61 Clethra alnifolia.
- 62 Viburnum dentatum.
- 63 Viburnum opulus.
- 64 Rosa multiflora.
- 65 Rosa rubiginosa.
- 66 Rhus typhina.
- 67 Amorpha fruticosa.
- 68 Philadelphus.
- 69 Rubus odoratus.
- 70 Weigelia candida.
- 71 Magnolia glauca.
- 72 Syringa vul. alba grand.
- 73 Ligustrum ibota.
- 74 Forsythia viridissima.
- 75 Spiraea aruncus.
- 76 Cornus paniculata.
- 77 Aster novae angliae.
- 78 Aster novae Belgii.
- 79 Asclepias tuberosa.
- 80 Yucca filamentosa.
- 81 Spiraea Reevesiana.
- 82 Amorpha fruticosa.
- 83 Hamamelis virginica.
- 84 Rosa multiflora.
- 85 Rosa rubrifolia.
- 86 Rosa rubiginosa.
- 87 Sassafras officinale.
- 88 Spiraea opulifolia.
- 89 Cercis japonica.
- 90 Cydonia japonica.
- 91 Berberis vulgaris.
- 92 Hellenium Hoopesii.
- 93 Viburnum opulus ster.
- 94 Syringa persica.
- 95 Exochorda grandiflora.
- 96 Acer pennsylvanicum.
- 97 Acer polymorphum.
- 98 Stephanandra flex.
- 99 Pyrus arbutifolia.
- 100 Rosa Wichuraiana.
- 101 Rosa lucida.
- 102 Coreopsis lanceolata.
- 103 Deutzia gracilis.
- 104 Crataegus crus-galli.
- 105 Carpinus americana.
- 106 Lonicera tartarica alba.
- 107 Cladrastis tinctoria.
- 108 Aralia pentaphylla.
- 109 Celastrus scandens.
- 110 Betula papyracea.
- 111 Azalea viscosa.
- 112 Azalea nudiflora.
- 113 Retinospora filifera.
- 114 Retinospora squarrosa.
- 115 Retinospora plum. aur.
- 116 Rhododendrons.
- 117 Kalmia latifolia.
- 118 Viburnum plicatum.
- 119 Potentilla fruticosa.
- 120 Ilex verticillata.
- 121 Phlox.
- 122 Halesia tetraptera.
- 123 Rhus cotinus.

PROSPECT PARK, BROOKLYN, N. Y.

I see in your current number an article on Prospect Park, which is a very good article, and very well illustrated. However, your writer has fallen into a little error, which I wish to correct, in regard to the cutting of trees. The public in Brooklyn have been very jealous about the cutting of trees in Prospect Park. It arose from a thoughtless commissioner, who, for the sake of making "vistas" and of "moral questions," which he thought were affected by the trees, cut down some of the finest trees in the park, cleaned out all the undergrowth, lopped off all the lower branches of the evergreens, and really created a scandal which the city has never recovered from. It is not a "misguided public" which is making a complaint about improvements, but rather watching with a jealous eye the vandalism of incompetent officials.

FRANK SQUIER,

Ex. Park Com. City of Brooklyn.



THE GREAT FAN PALM OF CEYLON IN BLOOM.

Tropical Vegetation.

THE GREAT FAN PALM OF CEYLON.

(*Corypha umbraculifera*).

This is one of the noblest of the royal family of palms. In Ceylon, where it abounds, it is called "Tallipot." On the Malabar Coast it is "Coddapana." It is also known as "Basket Palm" and "Shreetalum."

This palm is one of those marvels of the vegetable world which gather their strength and beauty through many years of growth for one supreme effort of blooming and then die. For the first thirty years of its life the great Fan Palm scarcely begins to develop a trunk though they afterwards attain a great height. In Ceylon the stems grow very straight and become as tall (Knox says) as the mast of a ship. The leaves are immense fans, twenty feet long and fifteen feet wide, composed of many segments with a thread between.

Like those of many other palms these leaves are put to a variety of uses by the Cingalese. It is indeed almost incredible to people of the temperate zones how many of the needs of tropical life are supplied by palms and palm products. A Tamil poem of South Hindostan enum-

erates 801 uses of the Palmyra palm (*Borassus flabelliformis*). The Cocoa palm is said to have 365 uses—one for every day in the year. The Great Fan palm in Ceylon is of the widest utility. Its leaves when dried are very strong and flexible and though very broad can be folded up into the size of a man's arm. The natives cut these leaves into triangular pieces for use; these they place on their heads, narrow end foremost, to make their way through thickets. Soldiers all carry sections of leaves to shade them from the sun, to keep them dry in case of rain and to make their tents at night.

In the center of the trunk is a pith which they beat into flour in a mortar and bake into cakes which taste much like white bread. The leaves are also used for roofing their houses and for writing on iron stylus. According to Loudon many of the books which are shown in European museums and libraries for the Egyptian papyrus are made from the leaves of this palm. Another corypha growing in northern India is of great use for roofing houses and other purposes.

When the Great Fan palm has reached the point of blooming it puts forth a vast tree-like panicle thirty feet high of beautiful yellow flowers, but so ill-smelling that blooming trees are frequently cut down when near dwellings. The fruit is about the size of a large cherry, not edible but

produced in such abundance that one palm tree will give seed enough for a country. The fruit takes 14 months to ripen, after which the tree dies.

The illustration represents this palm in bloom, but in the absence of anything by which to gauge its size it hardly gives an adequate idea of the great magnitude of the flower spike.

JOHN HIGGINS.

The Flower Garden.

SPECIMEN PLANTS ON THE LAWN.

Bocconia cordata or *Japonica* is of rather tall growth, 6 to 9 feet, and has remarkable ornamental foliage of a glaucous green, broad and roundish in outline with deeply lobed and undulated edges, prominently veined, very effective in general appearance. Its growth is upright and the stout canes are well furnished with the handsome foliage; the small flowers are produced in large terminal panicles, buff yellow in color and are ornamental as well as very graceful. The plant is often grown in the border and there is apt to take up considerable space after a few years if not checked, it suckers so persistently; on the lawn, the superfluous suckers should be removed annually, leaving the main clump undisturbed.

Bambusa Metake is sometimes used as a lawn plant, but requires several seasons to get well established unless we have a carefully lifted strong clump to start with; compact growth and graceful habit are characteristics of this charming bamboo-like plant; 3 to 5 feet is as high as I have seen it out doors, though when grown in a greenhouse its height is increased.

Echinops commutatus is a very tall growing species with roughly dissected large spiny leaves, thickly covered with bristly hair on the upper side. It attains a height of over 6 feet and has a bold appearance as a single plant; flowerheads are large and perfectly round, whitish in color and appear during July or August. *E. Ritro*, with bluish flowers of same shape, is a much smaller plant but equally effective. The leaves are veined prominently on the upper side and covered with a down beneath, not spiny, height about 3 feet.

Eryngium giganteum has large heart-shaped substantial foliage, deeply serrated along the edges, blueglobose flower heads, surrounded by large bracts and is a very ornamental plant of bold appearance, well suited for a permanent position in the lawn; it grows to a height of about 3½ to 4 feet.

A clump of *Cephalaria tartarica* looks well as an isolated subject on the lawn. When well established and full grown it will be 5 or 6 feet high with abundant foliage, which is of good size and pinnate on rather long petioles. The large globular flower heads are sulphur yellow in color, and in shape resemble those of a gigantic scabiosa. They last a long time in perfection and are very ornamental and interesting.

Clematis recta forms a symmetrical rounded compact bush, the dark green foliage retaining its color until late in fall and during June and July it is literally covered with fragrant white flowers borne in long, branchy panicles at the ends of the stems; 4 to 4½ feet is the height of old well established clumps.

Dictamnus fraxinella, a popular hardy plant with stiff leathery pinnate leaves, requires age before it makes any show on

a lawn. The flowers, which are either white or rosy purplish red in color, come out in long panicles during June and July. This plant is a good subject for small lawns where larger plants would be out of proportion; 2 to 2½ feet is its usual height.

Another fine plant for medium sized lawns is the dense and compact growing *Polygonum cuspidatum*, with oblong cordate leaves, glossy dark bronzy green, from the axils of which, numerous feathery little creamy white panicles, 5 or 6 inches long are produced in late summer and autumn. A generous clump of it is very ornamental and it succeeds just as well in a dry situation, but here its height would be reduced considerably and the stems are shorter jointed, though flowers are produced abundantly. In an ordinary moist place it attains a height of 4 to 6 feet and sometimes over.

on the plants and still be fresh at the end of a month. The cut bloom also has unexcelled keeping qualities; flowers can be kept in a room for two weeks with no extra precaution. The dark purple disk, which is characteristic in nearly all the varieties, combines admirably well with the broad and well shaped yellow ray florets and this pretty combination is not found in any other flower of the same size and substance. Some of them have stiff and stout stems, crowned by rigid, spreading flowers, the rays of which are hardly movable by the strongest wind, others with slender and graceful stems and long and wavy florets bend and flutter in a slight breeze, but whether rigid or slender, all are useful in a cut state.

The earliest to bloom is the well known *R. hirta*. Its flowers are produced in June and they will last to the end of August.



RUDBECKIAS IN THE BORDER.

Various other plants may be used to advantage in a lawn. We have employed the different eulalias, of which I should prefer *E. gracillima* on account of its exceedingly graceful appearance, the large leaved *Funkias subcordata* and *grandiflora*, yuccas, *Ligularia macrophylla*, *Gynierium argenteum* and *Aralia californica*, a herbaceous stemmed variety with very attractive leaves and pale yellow flowers in August; if I remember right it grows to a height of about 3 to 4 feet, and succeeds most anywhere without much extra attention. J. B. KELLER.

Rochester, N. Y.

RUDBECKIAS.

From the beginning of June until October the rudbeckias in different varieties will furnish us with most desirable and very lasting cut flowers. The older plants of *R. hirta* make the beginning and *R. grandiflora* and *columnaris* are the last ones to bloom, while other varieties will produce their bloom during the intervening months. All of these flowers possess advantages which are seldom found in a summer blooming plant, the ray florets adhering to the cone-shaped disk with a tenacity unequalled by any other class; the flowers last in perfection for many weeks without signs of decay, and if it is not desirable to cut them soon after fully opening out, they may safely be left

The disk is purplish brown and is, as in all rudbeckias, conical or elongated; the deep bright yellow rays are closely set and overlapping each other in the best forms at the base. The plant is branchy from below and the flower stems are therefore long, the foliage narrow and pointed, covered with a rough pubescence. Older plants are more floriferous and form round-headed specimens from 1½ to 2 feet in height.

R. Newmanii, sometimes called *R. speciosa*, is considered one of the best of the family. The flowers are larger than those of the foregoing and under good generous cultivation are four inches across, of a very bright dark yellow with a deep purple dish. The lower leaves of the plants are broad and roughly serrated, the upper ones narrow and pointed; it has the same branchy habit as the first mentioned but is usually about a foot taller and blooms in July, lasting until September.

R. maxima is a stately plant and to my knowledge the tallest one in the family. I have had it in rather moist borders attaining a height of over 8 feet, yet these plants would not require any support and were a mass of bloom from the 1st of August until late in September; but under ordinary treatment in a border where plants are crowded, their height will be only about 4 or 5 feet. The flowers are pure bright yellow, 4 to 5 inches across

and the disk is shiny deep purple. The leaves are oblong, slightly toothed along the edges and about 10 inches long.

R. grandiflora is the same plant we used to know forty years ago under the name of *Centrocarya* or *Centrocarya grandiflora*, and I am not sure which of the three is right, but it looks like a rudbeckia to me, although I may be wrong. The size and color of the flower compares favorably with those of *R. maxima* and the disk is dark purple, not so much elongated as in the others. The leaves are broad at the base of the plant and those on the lower part of the stems grow gradually narrower and more pointed. It is the latest one to come in flower and will last until the frost destroys it in October. The plant is of erect and branching habit and its height is about 4 feet.

R. pinnata also goes under the name of *Lepachys pinnata*. It is an exceedingly graceful grower with slender, wiry stems rising 3 feet or more above the ground and branching out more near the top, producing a succession of flowers from those branchlets. The disk is narrow and unusually long and tapering, the ray florets long, broad and wavy, drooping downwards when the flower opens out full. This is a most desirable and elegant variety, surpassed by none and begins to bloom in July. The leaves are pinnate with 3, 5 or 7 broadly lanceolate leaflets arranged along the common leafstalk. The plant forms a most elegant subject as an isolated specimen or in any other place and its light yellow flowers when gathered in long, branchy sprays, present a distinctly light and graceful appearance.

R. fulgida I have not seen in many years, but remember well its dark yellow flowers; perhaps the deepest shade found in the genus and it should not be omitted in this list. The plant is of intermediate height, not over three feet. The leaves are covered with a rough pubescence. Its flowering time extends from July to the end of August.

I should here also mention the class which we usually call echinaceas, though they are known in many places under the common name of rudbeckia. The best known is *R. or Ech. purpurea*, with reddish purple rays fading towards the tips to a peculiar grey and the extreme end tipped with green. A good sized flower, 4 inches, and desirable, but new plantations will seldom produce perfect flowers until the plants are well established. The flowerheads are produced singly at the ends of stout stems, which attain a height of between three and four feet. August and September is their time to flower.

R. or Ech. purp. serotina, may in many respects be considered an improved *purpurea*, is more decided in its color and the rays are broader and have not the tendency to curl up the edges as frequently seen in new plantings of *R. purpurea*; otherwise the plant resembles the type but the foliage is more hairy.

R. pallida or *Ech. angustifolia*, is light rosy purple, shaded with darker splashing; the rays are very long, often 2½ inches; the whole plant is hairy and has a more compact habit than the other two.

R. laciniata flore pleno, of which Mr. W. C. Egan, Highland Park, Ill., recently gave us such favorable reports, I am not in a position to say anything about for we have not tried it here, but as this gentleman is a close and careful observer, we can hardly entertain any doubt about its superior merits; moreover his photograph of a specimen less than six months old and necessarily not fully established, shows such remarkable vigor and a great



PHOENIX CANARIENSIS ON A LAWN IN NEW ORLEANS.

profusion of flowers, it can not fail to impress us most favorably. Neither should we entertain any doubts about its hardiness because the original type, *R. laciniata*, is found growing wild in many parts of our northern states.

The splendid keeping qualities of the rudbeckias are well known to all who ever had anything to do with them and yellow flowers are always useful. They are not difficult to manage and do well in all situations or soils, though they should have the benefit of full exposure to the sunlight. A row or two would require but very little attention and may remain undisturbed for many years, the plants growing stronger and producing more flowers with every successive season.

Rochester, N. Y. J. B. KELLER.

The accompanying engraving shows a group of rudbeckias (or echinaceas) composed mainly of *R. (or Ech.) purpurea*. At the left are a few plants of *angustifolia*. The low bushes in front are *Hypericum Moserianum*.

PHOENIX CANARIENSIS.

The accompanying engraving is from a photograph of a splendid specimen of this palm growing on the grounds of Mr. Simon Hershheim, New Orleans. The photo was sent us by Mr. Justin St. Maud, the gardener in charge, who writes:

"The plant is considered the finest and largest in the United States. It covers an area of over 100 feet in circumference, is about 30 feet high and is 15 years old.

It has stood the test of our lowest temperature (16°). It was recently in full bearing and had thousands of ripe seeds."

WINTERING TENDER PLANTS WITHOUT A GOLD FRAME.

When raising plants for one's own garden it is an unalloyed pleasure to start more than needed for personal use, that you may be able to divide with your friends, Mishaps may befall you or them, and an interchange of surplus stock not only often replaces what you or they may have had winter-killed but cements many a friendship that a kindred love of gardening has engendered.

In the latter part of July in each year I sow the fox-glove and Canterbury bells, and those perennials that I desire to add to my list, that do not bloom the first year from seed. The latter I start in March in the hot-bed and obtain blooms the same season. The latter part of July or early in August is early enough for either the digitalis or Canterbury bell. If the plants of these are large, as they would be from spring-sown seed, they are more difficult to carry over. My main stock, chiefly for my own use, is wintered in a cold-frame, and at this writing is in splendid condition. It is of my surplus stock wintered outside that I desire to speak.

My vegetable garden is bordered with a solid board fence six feet high, so constructed to ward off our spring winds from the lake. Choosing the northwest corner, at which point the ground is the highest, I nailed a sixteen foot scantling to the posts, about 2½ feet above and

parallel to the ground, using the north fence. The scantling butted against the west fence. The fence thus protected two sides of my "winter resort." Three scantlings were placed at right angles to the nailed one, one end resting on it, and the other resting upon the ground, thus forming the frame-work of a slanting roof.

Within the space to be covered were planted the fox-gloves, cup and saucer Canterbury bells, delphiniums, columbines, etc. Late in the fall a covering of dry oak leaves was put on about four inches deep, and before any rain or snow came to wet them, a covering of boards overlapping each other was placed over the whole bed. This week I examined the plants and as far as seen, all were in good form. The leaves were nearly as dry as when put on last fall.

About March 26, if the weather is favorable, I shall lift the boards and after removing the leaves will replace the boards and allow them to remain a week longer, but on fine days shall take a few off, thus allowing more light in to the plants. This winter has been a rather trying one on plants under cover as it has been wet and rather open.

W. C. EGAN.

ERANTHIS HYEMALIS.

(Winter Aconite.)

This beautiful harbinger of spring is now in nice flower, and how charming it is with its large yellow flowers set in a cup of leafy green! How cheerful it is in the dull early spring when nothing else is in flower except the snowdrops! It began

to flower on the 3rd of March and will last till the end of April. It is of little use for cutting, but for the decoration of the garden in early spring it cannot be grown too largely, and if it is associated with the snowdrops the effect is fine indeed.

It is of easy culture, only requiring to be planted and left alone. It is fine for naturalizing in the grass, in fact it will grow most anywhere. Planted near the house where it can be seen from the windows it makes the surroundings more cheerful, and to those who cannot go out, but who love to see the beautiful, it will be something to look at, and help to pass the dreary early spring more pleasantly.

DAVID FRASER.

ANNUALS FOR SUMMER FLOWERS.

A great deal can be done with hardy annuals in the decoration of our gardens. A stock is easily gotten up; even the

June, and were at their best in July. While in flower they were the showiest annual we had in the garden. Asters only lasted until mid-summer, but a second crop sown in June would flower well in fall. *Begonia semperflorens* makes a splendid bedding plant and lasts till cut by frost. *Dianthus* in variety begins to flower in June and lasts into August. They are very showy while in flower and are nice for cutting. *Calendulas* last all summer and are very free flowering, also good for cutting. *Phlox Drummondii* is a pretty annual but doesn't last over mid-summer. *Gaillardias* last all the season and are nice as cut flowers. *Verbenas* last all summer if they are kept pegged down so they can root at each joint. *Scabiosas* last all summer and are lovely as cut flowers. *Poppies* last into July and something should be grown to take their place when past. *Corn flowers* last the whole season and are greatly prized as

flowers are of large size. *Sweet Sultan* is good for cutting and lasts nearly all summer. *Mignonette*, if some is sown early and planted out it gives flowers a month earlier than if sown out in the garden; it should be planted both ways to have a succession. *Petunias* are showy and last all summer; they are of little use for cutting. *Silene* is fine for cutting but don't last long. *Candytuft* don't last after mid-summer but when in flower it is nice. *Gypsophila* is good as a cut flower but don't last long.

The miniature sunflower lasts all the season, and as a cut flower it is very fine. *Zinnias* last all summer and are useful for cutting. *Cosmos* are fine as cut flowers, and if they are grown in pots and plunged out they will give much earlier flowers than if planted out in the garden. *Pansies* sown in spring don't flower much before September. *Marguerite carnations* are free flowering annuals, and should be largely grown where cut flowers are much in demand; they bloom about five months from seed and sometimes before.

These are only a few of the annuals we grow but they are amongst the showiest and best for the amateur, but if more are wanted there is a large list to draw from. We like to try a little of every thing, not because they are all beautiful, but because they are interesting. DAVID FRASER.

Mahwah, N. J.

Aquatics.

THE PARROT'S FEATHER.

The accompanying illustration gives a good idea of the use to which one of our aquatic plants can be put. The name of the plant is *Myriophyllum proserpina-coides*, a name sufficiently repulsive to the ordinary reader to warrant him in having no further connection with the plant. It is better known, however, under the common name of Parrot's feather, which by the way, is a very applicable one, as the fine pinnate leaves resemble to a marked degree the green colored feathers of that bird.

The illustration is from the fountain at the north entrance of the U. S. Treasury Department at Washington, D. C. Mr. Feast, the gardener in charge, conceived the idea of having the water shed of the fountain fringed with this plant. He had some good rich soil prepared and placed in the upper part of the fountain, or the water shed, which stands some 3½ or 4 feet above the basin. A few dozen robust growing pieces of this plant were then dibbled in and then covered with some fine gravel; after that pieces of rougher stone were placed upon the gravel to prevent the soil from being washed out. In a remarkably short time it made a rapid growth, and by the middle of July it had grown to the dimensions shown. The plant covered about 19 feet in diameter.

Myriophyllum is from two Greek words, *myrios*, myriad, and *phyllon*, a leaf, in reference to the numerous divisions of the leaves. It is a native of Brazil and Chili, growing very dense, having an extremely feathery appearance. It requires mud to root in and is easily increased from cuttings. The stems are weak, but do not require support, all the pretty points of the shoots growing out of the water from 6 to 14 inches. In the illustration the shoots are hanging over the water shed from 2 to 3 feet. It is a very handsome and interesting plant and should be in every collection of aquatic plants; it is a fine thing for amateurs. C. L. R.



THE PARROT'S FEATHER

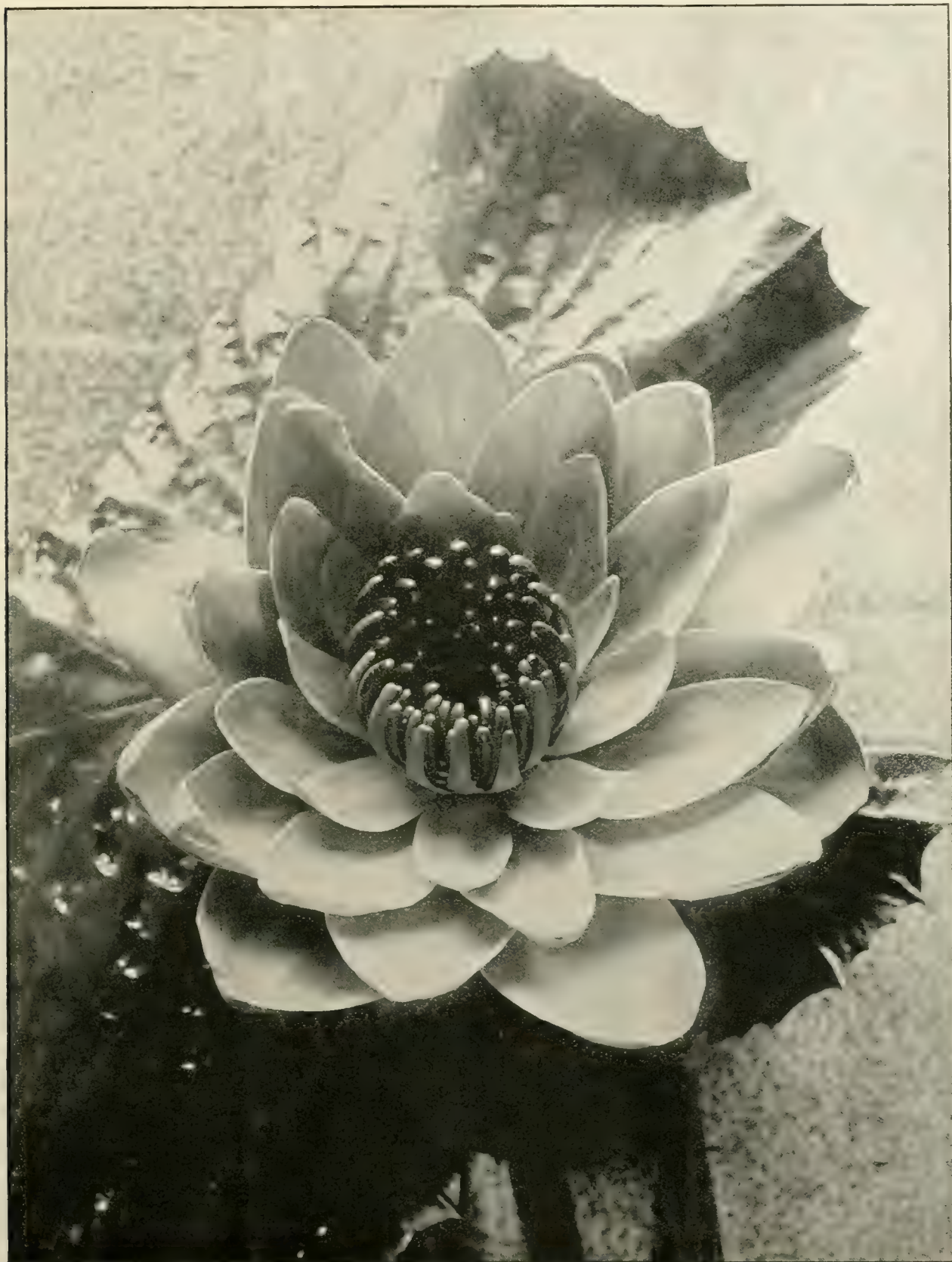
amateur with no greenhouse can have his display of annuals and of his own raising. If a cold frame can be used to sow the seeds in so much the better, but if this is not to be had they can be sown in the garden with good results.

There is a great variety of annuals but for the amateur a selection has to be made; something that is showy and will last all summer is what most amateurs like, but there is a host of lovely annuals which do not last all summer; for instance the ten week stocks are at their best in July; the same can be said of asters and poppies, yet no garden would be complete without them. This can be remedied to a certain extent if a second sowing can be made about the first of June. The plants can be plunged out till they are needed to replace the ones that are past; in this way the garden can be kept gay all summer long.

The following list comprises the showiest of the garden annuals, but by no means includes all that are worth growing. It is taken from my diary of last summer just as I jotted it down. Early sown ten week stocks came in flower in

cut flowers. *Coreopsis* lasts well and is good for cutting. *Chrysanthemums* last till cut by frost and come in handy as cut flowers. *Sweet peas* don't last after midsummer unless special care is given them in the way of water and feeding. *Balsams* are quite showy but not much use as cut flowers; they last the most of the summer. *Nasturtiums* are valuable as cut flowers although they are not very showy, the leaves hiding the most of the flowers. *Nicotiana affinis* is of little use as a cut flower but as it scents the whole garden at night all should grow a few of it.

The *antirrhinum* is a showy and free flowering annual and lasts the whole summer; it should be largely grown as it is splendid for cutting. *Larkspur* is good for cutting but don't last after mid-summer. *Marigolds*, both French and African, last all summer till cut by frost; they are good for cut flowers but some do not like the smell of them. *Celosias* are showy and last nearly the whole season. *Heliotrope* is fine for cutting and no garden is complete without it; it is best raised from cuttings although it is easy to raise from seed, and if a good strain is secured the



NYPHÆA STURTEVANTII

NYPHÆA STURTEVANTII.

This nymphaea originated with Mr. Sturtevant of Los Angeles, Cal., whose name it bears. In the Bartholdi fountain basin at the Botanic Garden in Washington this grand lily has borne some immense blooms. The color of the flower is a bright rosy red but varies with the

weather. This nymphaea is not a free bloomer as Nicholson states, but rather the reverse. It is a very robust grower having large leaves of a brownish metallic hue, quite distinct from any other species.

About the end of February, in order to secure a long season of bloom, the bulbs

of this variety should be started in water with a temperature of at least 60° F.; by the middle of May the plants will have attained a fair size, when they should be placed in their summer quarters. The soil should consist of loam and decomposed stable or cow manure in equal quantities.

GARDENING

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

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THE new tariff bill now before Congress imposes a duty of thirty per centum ad valorem on plants, trees, shrubs, vines, bulbs and roots. Flower and grass seeds, are on the free list.

At a recent meeting of Horticultural Societies in Washington steps were taken to secure from Congress legislation looking to the careful inspection of all plants, trees, shrubs, etc., imported from other countries, and the destruction of any affected by insect or fungous pests.

HENRY McCROWE, superintendent of parks at Paterson, N. J., died March 14, aged 50 years. He assumed charge of the Paterson parks March 1, 1894, and his management was characterized by such ability that the beauty of the parks was much enhanced.

THE tenth annual meeting of the Florida State Horticultural Society will be held at Orlando May 4 to 7. Full details may be had by addressing the president, Mr. G. L. Taber, Glen St. Mary, Fla. The printed report of the proceedings of the society for 1896, of which a copy has been sent us, contains many useful essays and discussions, is well printed, and shows that the Florida society is doing good work.

THE International Horticultural Exposition at Hamburg, to be held from May 1 to October 1 of the present year, was officially indorsed by the Executive Committee of the Society of American Florists at its recent meeting. The committee urges American horticulturists to be adequately represented at this exposition.

THE American Dahlia Society held its annual spring meeting in Philadelphia, March 17. The treasurer's report showed the society to be in good financial condition. The annual fall exhibition will be held in Philadelphia September 21 and 22. Officers for the ensuing year were elected as follows: Robert Craig, president; H. F. Michell, vice-president; Frank C. Bruton, treasurer; E. Clifton Taylor, secretary. Secretary Taylor's address is 4827 Main street, Germantown, Philadelphia, Pa.

THE Executive Committee of the Society of American Florists met at Providence, R. I., March 9 and 10, to arrange a programme for and attend to other business connected with the next annual convention of the society, to be held in Providence next August. Amongst other business a committee was appointed to act in harmony with the various Hatch Experiment Stations and to devise a comprehensive plan for special investigation of questions regarding plant growth, fertilizers, etc.

NITRATE OF SODA has been recommended for killing the destructive eel-worms that affect the roots of roses and other plants and which produce what is commonly known as "club root," but Mr. J. N. May, an expert grower, says that if applied of sufficient strength to kill the eel-worm it will also kill the plants. In his experiments a solution of one ounce of nitrate to four gallons of water (only one-fourth the strength recommended) killed three affected plants of chrysanthemums but did not kill the eel-worms in their roots.

DOUBLE GLAZING for greenhouses, meaning two layers of glass one above the other with an air space of an inch or less between them, comes to the surface as a new idea with more or less frequency. Such a double glass roof undoubtedly saves some fuel in cold weather but what is gained in warmth is lost several times over by reduced light. Dirt is bound to accumulate between the two layers of glass, no matter how perfect the glazing. Houses so constructed have invariably been changed to a single layer after a few year's experience. And the saving of fuel is not near so great as might be imagined. During very cold weather the moisture on the roof freezes so as to close every crack and make the roof practically air tight. Also the double glass roof does not admit the rays of the sun nearly as well as the single layer of glass.

THE advance premium list for the 1897 chrysanthemum show of the Horticultural Society of Chicago has been issued. A new feature is an "International Competition" in which prizes of \$5 each are offered for the best twelve chrysanthemum blooms in twelve varieties, from each state, territory and Canadian province. The winning exhibit from each state is to afterward compete for a prize of \$50, to be awarded to the best of these prize state exhibits. There are the usual liberal premiums for chrysanthemum plants and flowers, roses, carnations, decorative plants and floral arrangements. Two classes that are open to amateurs only are "Best five plants in

bloom" and "Best display of cut flowers." Prizes of \$10 for first and \$7 for second, are offered in each class. Copies of the list may be had by addressing the assistant secretary, Mr. W. N. Rudd, room 202, 185 Dearborn street, Chicago.

The Greenhouse.

A SMALL GREENHOUSE.

A subscriber in St. Louis who received some suggestions through GARDENING on building a greenhouse thanks the undersigned for his ideas and will build the house from 20 to 30 feet in length and 19 feet wide. He is still open for opinions on size of glass, etc.

The glass if laid in putty and lapped, which is best if near a city on account of smoke, had better not be less than 12 inches in width; 12x16 or 14x16 is a good size. But if you want a still lighter house use 16x20 inch. Glass is more expensive as it increases in size, and see that there is one-fifth of white lead used in the putty; that will prevent it from rotting. If you can afford to have side glass it will make your house very much more valuable for growing plants; that is if your walls are 4 ft. 6 inches high let 2 ft. of it be of glass and it will cost little more to have this side glass in sash, hinged so that they can be used for ventilation in summer time, as we never can have too much ventilation during the hot summer months.

One of the most important things in building a greenhouse is to have an iron column directly under the ridge pole; it can rest on a flat stone. One and a quarter inch is large enough for the column which can become pipe. If your ridge is well supported the house cannot spread. In conclusion go to a practical commercial florist in your neighborhood, who will know more about building than any of the ordinary builders. WM. SCOTT.

STREPTOCARPUS WENDLANDII.

We raised a number of this new streptocarpus in February of last year. They have grown very well, as the leaves are now about two feet long by ten inches wide. As this plant makes only one leaf, we put three plants to a pot, pointing them out in different directions. In this way they have a better appearance than if only one plant was used. The leaves hang gracefully over the sides of the pots, curving inwards, and as a plant it is ornamental without any flowers. It is said to have nice spikes of bluish flowers, but of them we cannot speak as our plants have not flowered, and it is this part that is now troubling us. Some of our plants have been showing flower for over three months, the spike being about an inch long all that time, but they don't move a bit, and this being a new plant we are anxious to see it in flower. Have any readers of GARDENING had any experience with this plant? DAVID FRASER.

SWAINSONA GALEGIFOLIA ALBA.

F. N. B. expresses great interest in an article on the above plant which appeared in GARDENING of March 1, but says that with her it has been a very "disappointing plant." It flowered very sparingly at first, which was attributed to extreme growth. Then it was planted out last spring but no blossoms appeared during the summer. In September it was lifted and put into a 7-inch pot, and up

to date no flowers. "What shall we do the coming season for we don't want to give the case up yet. Shall the swainsona be put into a box and prepared in that way for next winter's bloom? If so how large a box and what shall be the treatment through the summer?"

If the plant is in good health I would advise that it be cut back to within 18 inches of the pot and about the end of May shifted into a 9 or 10-inch pot and plunged out of doors for the summer. If taken in before any danger of frost, it will undoubtedly flower next winter, or you can throw this old plant away, beginning with a young plant this spring and shift on during summer till you have it by fall in a 6-inch pot; shift no more and it will flower as soon as the roots have filled the pot. The swainsona is classed as a sub-shrub, that is, a plant hardly worthy of being classed as a shrub, and is a native of Australia. It cannot be expected to be continually in flower but doubtless where it is many times disappointing is because it is given too much root room, and while growing vigorously it has no inclination to flower.

A commercial experience with this climbing shrub has proved this: Some plants that were given unlimited root room grew six feet high and very bushy but scarcely flowered at all in one year, while a number of plants planted by the side of the iron supports in a carnation

[CONTINUED PAGE 220.]



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800 Sycamore Maple, 10 to 12 ft., 1½ to 2½ in. caliper.
750 Weirs Cut-leaved Maple, 12 to 16 ft., 1½ to 3 in. cal.
500 White Flowering Horse Chestnut, 10 to 12 ft., 1½ to 2½ inches caliper.

150 Purple Birch, 10 to 12 ft., 1½ to 2½ in. caliper.
200 Golden Catalpa, 12 to 16 ft., 1½ to 3½ in. caliper.
1200 Western Catalpa, 10 to 14 ft., 1½ to 2½ in. caliper.
75 Weeping Beech, 8 to 12 ft., 2 inches caliper.
500 Purple Beech, 8 to 12 ft., 1½ to 2 in. caliper.
1000 Oriental Plane, 12 to 15 ft., 1½ to 2½ in. caliper.
50 Bolleana Poplar, 16 to 18 ft., 2½ to 3½ in. caliper.
1500 European Linden, 10 to 12 ft., 2 to 3 in. caliper.

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TREES

FRUIT AND ORNAMENTAL.

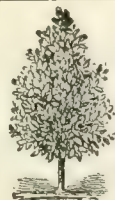
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bench flowered finely from January to June. They were planted in September at the same time as the carnations but not allowed to run their roots all over the carnation bench, being confined to a box ten inches square and five inches deep. The bottom of the box was the boards of the carnation bench.

F. N. B. says she has purchased a plant of Tecoma Smithi "which shows no inclination to run and is plainly a shrub. Would like to know the smallest size pot in which will bloom." This tecoma may show more of a climbing nature as it gets older. I would not advise it being starved in too small a pot. Give it a 5 or 6-inch this spring and encourage it to grow by an abundance of water during summer, giving plenty of air in September and October and withholding water slightly as its flowering season approaches, which is in November and December.

W. SCOTT.

HEATING A SMALL GREENHOUSE.

From Iowa City, Iowa, comes the enquiry, "Is it practicable to heat a small greenhouse attached to east side of house with hot water? It is now heated by steam supplied from the boiler which heats the dwelling house. Could the steam pipes be made to run into the water pipes far enough to heat the water satisfactorily? I wish to have the steam pipes removed and replaced by hot water pipes."

This is not easy to answer without seeing the present conditions. If the steam heat is not satisfactory it would be better to have a small heater to circulate the hot water and be entirely independent of the steam boiler which heats the dwelling. But unless the steam boiler is overtaxed why remove the steam pipes? Steam is just as healthy for plants as hot water and if regulated by valves would answer all the purpose of hot water. Steam has some advantages over hot water. On bright days it can be shut off early in the morning and in a few minutes the pipes will be cold. Then again you can on the sudden approach of a drop in the temperature have the steam pipes hot in ten minutes.

W. SCOTT.

OTAHEITE ORANGE AND LILIES.

"Subscriber," Madison, Conn., enquires: "Can I graft the Otaheite orange on a seedling Florida orange and when shall I do it? What can I use to improve the bloom of Easter lilies now in bud?" Certainly the Otaheite orange can be grafted on any seedling orange. The best time for the operation would be just before the active growth of the stock and scion. The present time would possibly be as favorable as any, as the warm days of spring will soon induce a growth. Keep the plant after being grafted rather close and moist till signs of growth appear on the graft.

It is too late to mulch the Easter lilies (By Easter lilies I take it for granted that the Bermuda is meant), but liquid manure will give color to the foliage and increase the size of flowers; ½ peck of manure from the stable or cow barn in eight gallons of water will be plenty strong enough and twice a week will be often enough to apply the liquid manure. W. SCOTT.

WEAK VIOLETS.

The following comes from "W.": "What is the reason that the stems of both leaves and flowers of violets are so weak and flabby? Marie Louise, Lady Campbell, [CONTINUED PAGE 222.]

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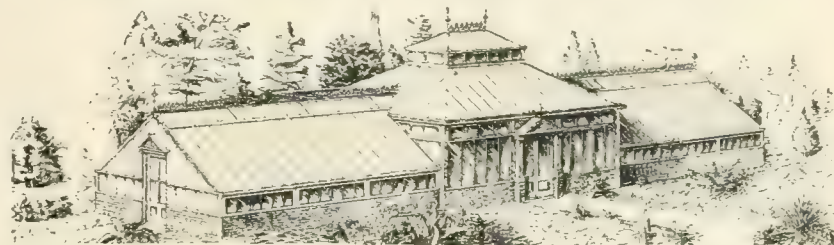
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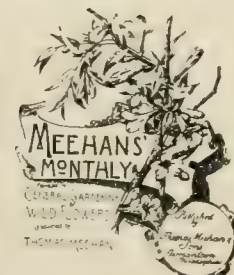
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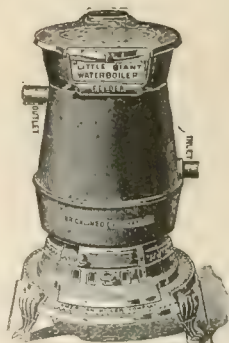
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No. III.



A BACK YARD GARDEN.

The Flower Garden.

A BACK-YARD GARDEN.

My gardens are created out of some useless bits of ground wandering in among certain college buildings, and ending at my back door. The first one I will call the Bell Garden because the college bell is in the corner. It is almost enclosed by buildings and on the northern or bell wall is planted the *Clematis graveolens* of the illustration [page 227].

It was only a few inches high when I planted it, fifteen years ago. I knew nothing about it except that it was yellow. It grew ten feet the first year, making a long vigorous succulent growth, like some annual climbers. The foliage is very elegant, with deeply cut leaves of a peculiar exquisite tint of green. The next summer it was at the top of the building and would have gone farther, if the wall had been higher. It is about twenty-five feet high. Its habit of growth is like that of the Virginia creeper; every

year or two the old branches die and can be broken out, and are replaced by a young growth which rushes up the wall with renewed vigor. The whole plant was, therefore, as handsome ten years ago as it is now.

It begins to flower early and continues to put out its small greenish yellow flowers of the *Viticella* type until the frost. These flowers are not individually beautiful, but they are in such profusion that they make a good effect. The seed pods are an especial feature; they are produced immediately, so that the plant is equally covered with seed pods and flowers. The silvery green filaments of these seed pods are often more than two inches long. It is a very beautiful sight to see the whole mass swaying slowly in the wind, with the sun glittering in these shining filaments, and myriads of bees attacking the flowers so that their humming can be heard all over the garden. They are probably attracted by the perfume that gives it its name, but I cannot perceive it.

The screen under which the maid with coffee is passing into the second garden is

made with three strong wires stretched between the ends of two buildings which approach within ten feet of each other. A few long slender branches of the Virginia creeper which was already growing on the wall, were twisted along these wires, and by the fall the screen was covered. Nothing further has ever been done to this lovely screen for twenty years, except occasionally to break out the old wood, and to clip it when it hangs too low.

When I first saw the second garden, which is the one illustrated, it was a barren waste, with the long empty wall of the chapel to the north, the gable of the stable on the west, and the south and east shut in by a shabby board fence. It was about seventy-five feet long and twenty-five broad, and given up to an old barrel or two and a few heaps of ashes. The ground was heavy and poor, and anybody whose heart was not set on a garden would have pronounced it hopeless. For a year or two it was planted with corn and left in a rough state in the winter for the frost to break it up. Some

loads of common fresh stable manure, now and then a load of spent hops, a few loads of good loam, were dug in. All this was done in a very desultory, unscientific sort of way, just as I could get the material or capture a man to dig it in.

About twenty years ago the ground was in good enough order to lay out very simply, with two long beds separated by a four foot walk, and a cross bed at the east end. In the middle the beds curve back to leave room for a round bed about four feet in diameter. The whole space in cultivation is about seventeen feet by

ter does not kill them, and here and there, where the sharp leaves will look well, the German iris. At the east end are well established plants of perennial phlox carefully selected; flaming salmon pink and white, and anything that is not purple pink. There is also a hollyhock or two lifting up a tall spire of crimson or rose above the wall. In the curve behind the phlox I have a sunflower whose name I do not know. It has long willow-shaped leaves, and by September is eleven feet high. It sends out long branches into a head about 6 ft. across and completely covers itself with clear small yellow flow-

of big white hardy pinks and tufts of the charming *Campanula carpathica*, which lifts up its delicate profusion of lilac bells from early summer till frost.

In the other long bed the box edging on the outer side was winter-killed so often that I replaced it some years ago with a row of stones. These stones disappear beneath a host of little things which would be lost in the beds. *Viola lutea*, *Gypsophila elegans* and *muralis*, *Sedum lydium* with its pretty pink early flowers, *nudicaule* poppies, perennial forget-me-not, some choice portulacca, lobelia and daisies (*Bellis perennis*). Beds of cerastium and white pinks run down into the cracks between the stones.

In this bed I have pyrethrum, deep red like Captain Nares, and blush pink like a big daisy. In the corner near the screen I have some Jacks which do nobly in their season, but they are all the roses I have. Here are dark red sweet william, of which color I keep up my supply by tipping over the little cups brimming with seed, on to the ground just below, where they come up immediately. There are compact little clumps of the lovely *Polemonium Richardsonii*, beginning to bloom the 25th of April, covered with light blue softly falling bells. In this bed are *Sedum spectabile*, and *Sedum Sieboldii*, charming even when not in bloom.

Farther along and visible in the illustration, is a little tree. This is a sweet briar, trimmed high and in June a pretty sight with its countless shell pink blossoms. One can also see one of the pæonies which are at the four corners of the beds. These pæonies are pink, with immense flowers as big as a child's head. When the garden is in its pink and blue and white state, about the middle of June, and I look over from the great larkspur at the east end, holding its rods of blue high in the air, over snowy masses of cerastium and hardy pinks, past the heaps of rosy pæonies falling about in reckless profusion, to the Madonna lilies, their ivory whiteness relieved against the dark green on the gable wall, then I remember the old barrels and the heaps of ashes and feel a great satisfaction.

Anybody with love for gardening could do all and more than I have done. I have never had any regular assistance. I have had to depend upon incompetent old men and transient boys, who have found steady work as soon as I had turned them into enthusiastic gardeners. All the plants I have mentioned are perfectly hardy, of very easy cultivation, almost taking care of themselves. I know nothing about the values of different fertilizers, in fact the whole garden for twenty years has been conducted on a most unscientific basis, and though more knowledge would have brought forth more results, yet I have had an immense deal of pleasure, and my little garden is the delight of a great many people.

I have not said a word of the lovely annuals that fill every vacant space nor how I raise them, nor how I keep my garden free from weeds, but already I have far exceeded my utmost limit.

Schenectady, N. Y.

A. D. P.

PRUNING VINES.

Many of us are planting vines this year, and if we desire success and thriftiness we must prune them properly. Continental Europe is the great source from which America deserves its main supplies. These vines, when shipped, are left several feet long, that the buyer may see how strong a plant he is getting. Although



UNDER A BOWER.

seventy. I have also two long narrow beds under the chapel wall for annuals.

About seven years ago the college put up a wall in place of the shabby fence which was about to give way under its weight of climbing things. I planted *Ampelopsis Veitchii* at intervals of six feet; it now almost covers the wall with a close green mat, growing over the top and running over the outside. In front of this chicken fencing is securely fastened the whole length and breadth of the wall. On this my perennial climbers are planted, so that they hang out from it charmingly relieved against the fresh mat of green. This wall is now almost hidden beneath various sorts of clematis. I use a good deal of *C. virginiana*; it hangs a milk white garland along the top of the wall, and when it is gone, too soon, there is something else in its place. I have *C. crispa*, *C. flammula*, and *C. paniculata*, the latter seen in the illustration like a drift of snow curving over in such a mass that it has to be supported. This strong tall growing climber is wasted on such a wall, only 7 ft. high, but I cannot part with it. It has been in that place three years.

Under the wall are clumps of *Hemerocallis flava* (Lemon lily), periwinkle, sometimes primroses, when a hard win-

ters; the snowy mass of the *C. paniculata* against it produces a stunning effect. [The sunflower is probably *Helianthus orgyalis*.—Ed.]

In this bed are achillea, carefully kept in bounds, *Aquilegia chrysantha* (the yellow columbine), most lovely against the greenish white of a great bush of *Gypsophila paniculata*, and contrasted with the dusky purple of the *C. crispa*, the *Chelone barbata* which is seldom spoken of, and which just now I have looked for in vain in several catalogues. [It is now classed among the pentstemons. Ed.] It makes a dark green shining mat of leaves, out of which rise its scarlet flowers, strung like jewels on long slender stalks, more than two feet high. It is not herbaceous but evergreen. On one of these mats (which are attractive even when not blooming), I counted fifty stalks in bloom at once.

There are also many plants of *Aquilegia cærulea*; mounds of pretty foliage with rigid stems carrying their long spurred flowers of most ethereal blue and white. There is *Heuchera sanguinea*, with, last year, thirty stalks in bloom at once; *Alyssum saxatile*, with its early yellow, shining against a line of *Gesneriana* tulips, a great plant of perennial larkspur, a bed of *Lilium candidum*, heaps



CLEMATIS GRAVEOLENS

well packed to stand their long journey the prolonged absence from the soil must somewhat impair their vitality. Some evaporation of their natural moisture must take place along the long lengths of wood retained. This will occur even under the most careful treatment. Long handling of such merchandise, for they are but merchandise, in the hands of the dealer render some quite careless, and even criminally negligent of a careful and proper treatment.

Only last week we saw at the receiving door of a large department store a large wagon load of what looked like the ampelopsis. They were piled up in layers like so many scantlings. No covering of any nature was placed around or over the roots. When these plants finally reach the dealer, they will probably be dampened at the root and moss placed around them so that when the buyer examines them they seem to be in excellent condition. The period is too

short between the time of undue exposure and sale to show any damage that may have occurred. Of course all vines we buy may not have undergone this treatment, still we do not know what trials and tribulations our new possessions may have undergone, and it is therefore best to assume that they have become considerably weakened.

We gaze upon the long vines attached to the roots and imagine their effect when densely clothed with leaves. The roots look strong and the wood of the vines is apparently plump, and the temptation to plant them just as they are, is very strong. In fact so strong that some of us cannot resist it, and in they go, to impose upon the torn and weakened roots the double duty of re-establishing themselves, and at the same time supporting a head of growth that in itself is sufficient to, and probably will, exhaust all the reserve plant food stored up in the roots before they have established a work-

ing force of food gatherers to replenish the depleted root system. Either a failure to exist, or a weakened struggling growth for a few years is sure to follow.

The proper thing to do is to cut the vines back to at least one foot from the ground. This applies to all vines except those (seldom obtained) that may have been established in pots. In this case, if the soil at the roots has not been disturbed much, the vine may remain. Climbing and pillar roses are classed as climbers in this article and should be cut back.

Of the clematis there are some types that bloom on the old and ripened wood of the previous year's growth. To cut these down would deprive one of all flowers for the current year, and as nearly all of the large-flowered section are subject to disease, and many apt to die the first year, it is best to try a half-way treatment. Endeavor to obtain plants having two or more main stems, and cut out one-half of these, trusting to get blooms on those left. Many nurseries in this country grow the clematis in pots. These may be planted without cutting back.

While on this subject it may be well to state that owners of clematises should know the type to which these plants belong. If spring-bloomers, which flower on the old wood, care must be taken to preserve the old wood in the fall. The *montana*, *patens* and *florida* types bloom from the old wood, while the *lanuginosa*, *Viticella* and *Jackmanni* section will bloom from the wood of the current year.

W. C. EGAN.

HINTS ON THE CULTIVATION OF HERBACEOUS PLANTS.

[Read before the Pennsylvania Horticultural Society, February 16, 1897, by Joseph Meekins.]

It is so common to hear persons say, when viewing some woodland beauty, "How I would like to transplant it to my garden!" While it is true that but few succeed in getting such plants to flourish in their gardens, it is nearly always from lack of knowing how to make them feel at home. Let me mention the trailing arbutus, *Epigaea repens*, as an illustration. It is the common belief that this lovely flower cannot be transplanted, and more than once I have corrected writers who have asserted this in public print. I have transplanted it successfully, so have many others. Two summers ago, when in England, I saw a nice patch of it in the Bagshot Nurseries, and many other large nursery firms there offer it for sale. It is not a native there, so that it follows that at some time or other the plants were safely transported from here, seedlings of it being rare. This plant likes shade and moisture and to be undisturbed. It would not thrive in the open garden, but if small, bushy plants with a good ball of earth be taken and set in a woodland where the required conditions exist, they will live and flourish.

With native plants a little care should be taken to provide for them situations as alike as possible to those they have been accustomed to. There are shade loving plants and those that have grown in open places. It often happens that a partly shady border is at command, where those that demand it can be placed. It does not always follow that a wild plant is found growing in the best possible place for it. Take for example the scarlet columbine, found on damp rocks along the Wissahickon. I have seen better specimens of it in open places in gardens than ever I have seen wild, no

doubt because that the garden afforded better food than its native rocks did.

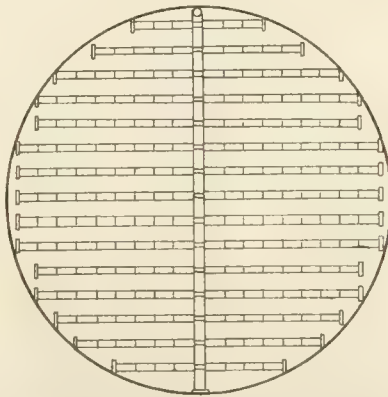
To those who have not tried it, it would be a great surprise to find how much better plants grow when the ground about them is well mulched. It makes the plants feel more nearly at home than anything else that could be done, save the giving of shade to some of them. Plants in the woods have shade above them and decaying leaves about them, and those in fields have grass or other plants about them, so that in both places the roots are cool. This is what mulching of the garden plants does, this and the preservation of moisture. Another thing rarely thought of is this. The wild plants in the woods are so covered with forest leaves that frost does not get to their roots. I am sure that all plants, hardy or not, are the better for this, and I would mulch afresh in fall, that the roots may have a winter covering. As herbaceous plants will repay good food given them, I would mulch with manure in the fall. Let it be long manure, the better to protect the plants. The straw portion can be raked off in the spring. The remainder can be left undisturbed. It will be loose, and often it will be sufficient mulching for the summer.

Next to mulching there is nothing like a constant stirring of the soil. Let me say here that I have found many workmen in gardens totally unacquainted with the principles of hoeing. The hoe is drawn over a surface already hard, cutting off the weeds close to the ground. Then the weeds are raked off, leaving the ground in really worse condition than before, for the weeds shaded the surface if they did rob the ground. Hoeing should be fully as much to loosen the soil as to destroy weeds. Every stroke of the hoe should loosen up an inch or more of soil, and this loose soil should not be raked down too fine, or the first heavy rain will beat it down very hard. One would hardly believe what a help constant cultivation of this kind is to herbaceous and all other plants. And when rains come, the water is all taken up where it falls. Good mulching preserves the looseness of the soil in the same way. I am sure that very many more of our lovely native flowers could be successfully grown than there are if mulching or hoeing could be made a feature of cultivation.

In regard to the propagation of herbaceous plants, it is mostly by division of the root or by sowing seeds, though when greenhouse facilities are at hand, many sorts can be increased by cuttings. A little practice will suggest the best mode. Those that can be divided will show it after a year or two's growth, by the clump-like appearance displayed. There is no set time for dividing the plants. Very early spring is an excellent time; so is early fall. If done late in spring, the summer's heat comes on to them too soon, before well rooted, and in late fall frosts behave in the same way. The sowing of seeds is an interesting as well as a successful way. This work should be done early in spring, out of doors, just as soon as the season will permit. There are some kinds, such as our wild aster, which are the better for being sown in the fall. Just before the ground freezes up will do. The seedlings will appear early in the spring, and, what is more, they will flower the same season, in the fall. It was my intention to name some fifty kinds of herbaceous plants, giving the months in which certain ones flower, but as the catalogues of nurserymen contain this information, it seems hardly an

advantage to do it here. I will but say that, commencing with April and ending with November, something can be had for every month of the term.

Instead of saying more about these plants, I will diverge a little and speak of ferns. I believe that all of us that possess a garden, be it ever so small, have a place for a few ferns. What they require above all else is shade. It may be the eastern or northern side of a dwelling on a wall or any other situation where the afternoon sun does not reach them, and it will do. Under trees is not suitable, as a rule. The roots of the trees exhaust the soil of moisture, and the branches shed big streams on the fronds, both to the injury of the plants. My own collection of native sorts is planted on the eastern side of a neighbor's house, which forms a division line. The sun shines on them until noon but not later. They flourish in the best possible way. Among the 25 sorts collectable about our city, some half dozen of them are evergreen, and these should certainly be planted. The



Ground plan of bed arranged for Sub-Irrigation

time to collect ferns is toward late summer. All the kinds can be seen then, and their fronds being fully matured, the height to which they attain is shown; and the proper place for them in the garden can be determined. Take a good ball of earth with them if possible, though as it is easy to get all their roots, they are not difficult to transplant without this.

During the trip to England already referred to, it was my privilege to visit many large private grounds, and though the climate of that country is thought particularly favorable to the cultivation of herbaceous plants, I cannot say that I saw any evidence of more interest in them there than is displayed here. But let any one who wishes to see them in perfection visit the Royal Gardens, Kew. The department for these plants is supposed to contain everything hardy, and to have every plant correctly named. And as far as possible to every plant has been given a position it prefers. There are swamps, bogs, dry rocks and damp rocks, shady nooks and open places, all filled with flourishing plants. With note book in hand, after two visits, I did not nearly make record of all I would have wished to have done. In the woods and fields visited I did not find nearly as many wild plants as similar situations here afford. No doubt it is there as it is here near large cities, those who see pretty flowers are apt to dig or pull them up, and so they disappear. On reaching these shores again, after my travels abroad, I could but feel a pride in the beautiful scene presented on each side of the track as the cars sped on from New York to Philadelphia. It was the month

of August and, while full of recollection of the never to be forgotten kindnesses shown to me by the good friends I had parted with in England, it seemed to me the picture before me could not be presented on any other shore. Crossing the Delaware at Trenton and entering once more Pennsylvania, my feelings can be expressed by quoting these lines from Byron,

Yet are thy skies as blue, thy crags as wild;

Sweet are thy groves and verdant are thy fields

For look wherever I would, cultivated fields, the trees of the forests, and the wild flowers of the roadside seemed to me never to have looked so beautiful.

SUB-IRRIGATION FOR LARGE FOLIAGE BEDS.

The surface watering of large foliage beds is attended with considerable difficulty. If the planting is properly done, the plants when in full foliage stand too close to permit one to walk between them and it is almost impossible to use the hose without damaging the plants more or less. Lawn sprinklers require a considerable head of water to work satisfactorily, and even with this, they can not often be so placed as to water a large bed uniformly. More important still, comparatively few people have access to a head of water sufficient to permit the use of either the hose or lawn sprinkler. To obviate these difficulties, the experiment was made the past season of watering a large foliage bed from beneath, in the following manner:

A circular bed 22 feet in diameter was prepared for sub-irrigation by removing the top soil to a depth of 16 inches, at which depth the subsoil was compact red clay. Three inch round tile in sections one foot long were laid over the bottom of the excavated circle, as indicated in the accompanying diagram.

A line of the tile was first laid across the center of the bed, the sections being placed three inches apart. At right angles to this, were laid branch lines, opposite the spaces between the sections of the first line, the sections of the branch lines being placed close together. The outer end of the branch lines and one end of the main line were then closed with bricks, and at the other end of the main line a section of five inch tile two and a half feet long was set vertically, as an inlet to the system. The spaces between the sections in the main line were covered with pieces of tile, after which the joints were closed with cement.

The tiles were then covered with well-enriched soil to a depth of 24 inches at the center of the bed, and the surface was gently rounded to the border. The bed was planted June 1st with the ricinus at the center, surrounded with a group of 50 *robusta* and 50 *Crozycannas*. Around this was a belt of 80 plants of *Caladium esculentum*, and these were inclosed with a belt of *Verschaefelti* and Golden Bedder coleus, and lastly the whole was encircled with a narrow band of Silver-Leaf geraniums.

Rains came sufficiently often so that no artificial watering was needed until June 24. On that day, and also on July 7th and 15th, and August 6th and 21st, water was supplied to the tiles from the Station irrigation system, until the soil of the bed appeared moist to the surface. The quantity of water required to thoroughly wet the soil was very large, amounting to in the neighborhood of fifty barrels for each watering. How much of this water escaped through the subsoil, we have no means of knowing.

The accompanying half-tone illustra-



SUB-IRRIGATED BED OF FOLIAGE PLANTS.

tion shows the bed as it appeared on August 6. Many of the cannas at that time measured 9½ feet in height and many of the caladiums 4½ feet. Some of the leaves of the caladium measured 34 inches long by 24 inches broad.

The objection may be raised that a bed prepared in this manner is very expensive. This objection would be quite pertinent if it were necessary to perform the work every year. But the tiling is expected to remain intact from year to year, so that a bed once prepared in this manner requires no further care than the ordinary bed receives. It should be remembered also, that the plants in such a bed are necessarily expensive, and a slight additional outlay that will make them fully satisfactory even in the driest season is fully warranted.

It is possible that half the number of branch lines of tile would have answered the purpose quite as well. In localities having a sandy subsoil, it would probably be necessary to cement the bottom of the excavation, and a short distance up the sides to prevent the water from rapidly wasting through the porous subsoil.

FREDERIC CRANFIELD,
Agric. Exp. Sta. Madison, Wis.

SPIRÆAS—DESMODIUM.

E. M. C. would like to know, 1st, whether a bed situated on the north side of a house would be a suitable place for various varieties of spiræas; house about 18 feet high and the bed 6 feet away from it; 2nd, Does *Desmodium penduliflorum* spread or make a large bush? Is the white variety any good?

The first question we may safely answer in the affirmative, as I suppose Mr. C. has reference to herbaceous spiræas of various varieties, in fact I should prefer such a situation to a southern exposure; the free circulation of air is not perceptibly interfered with at the given distance, 6 feet away from the house, and the somewhat shaded position tends to pro-

long the flowering season, provided however that the ground is kept moist enough for the plants; this latter point is most essential in the successful management of all the herbaceous spiræas; they dislike the heat and also the dry soil. I have never tried a bed of these plants alone and without other later flowering hardy plants, but where a display of flowers is only required during June and July, and perhaps up to the middle of August, spiræas of various kinds would answer the purpose. In August many of the species will begin to ripen their foliage and become rusty looking; if the cheerful appearance of the bed is to be kept up in the fall months, I should advise the introduction of a few scattering plants of either aconitums, hibiscus, heliopsis, rudbeckias or the like, which would hide the decaying foliage of the spiræas from direct view and at the same time keep the bed in presentable condition.

In answer to the second question I can say that *Desmodium penduliflorum*, or as some call it, *Lespedeza bicolor* or *L. Sieboldii*, is a most desirable shrub-like hardy plant of tall and upright growth and elegant habit, from 4½ to 6 feet high with pinnate leaves oblong in form and it bears deep purple flowers in branched long drooping or arching panicles. It is very effective along the edge of a shrubbery or in the border and blooms in late summer. The white variety I have not seen and cannot say anything about it.

J. B. KELLER.

SPRING FLOWERS.

The fine spring weather we are having just now is bringing along the spring flowers very fast. Already our garden is quite gay at this writing (April 1). Everything is two to three weeks earlier than the spring of '96 excepting the snowdrops, which were only two days earlier; they opened their first flowers the 7th of February and were about at their best on March 25, the ones planted last

fall being the latest ones to flower. A fine effect was obtained by planting snowdrops on a small terrace which is covered with periwinkle. The bulbs were planted quite close together, a sharp pointed stick being used to make the holes, putting the bulbs about two inches deep and a little sifted soil over each bulb. Scillas were also planted amongst the snowdrops to give a succession of flowers.

The winter aconite was about at its best March 23, although in some shady nooks it is still in fine flower. Naturalized in this way it makes a nice showing where scarcely nothing else will grow.

Leucojum vernum (the spring snowflake) came in flower March 22 (17 days earlier than last year). This is one of the choicest early spring flowers we have. In appearance it resembles a large snowdrop. It sends its flowers well above the foliage, the glooms being pure white except the point of each petal which is tipped with green. When grown in a mass it is very showy and does well naturalized amongst deciduous shrubs where it is not disturbed as it likes to be left alone. It does not increase so fast as many bulbs do but it is quite cheap, and should be in every garden.

Bulbocodium vernum opened its first flowers on the 22d of March and at this writing is at its best. It has scarcely any foliage and the flowers open close to the ground. In color they are bright rose-purple and last for some time, but they are of no use as cut flowers.

The crocus opened its first flowers March 20 (12 days earlier than last year), although in some sunny parts of the place, where sheltered from the north and west, it was in flower two weeks before we had them in the garden. Of these flowers we grow many. Last fall we naturalized four thousand in the grass but these are not yet in flower. We do not expect a great deal of bloom from them this season as it generally takes them a year to get established.

Scilla siberica came in flower March 26 (21 days earlier than last year). This is a small showy blue flowering plant well suited for the edgings of beds although it is seen at its best when grown in a mass. It is of little use for cutting as the flower stalks are too short.

Puschkinia libanotica compacta was in flower March 27 (20 days earlier than last year). This is a little spring beauty and well worth a place in every garden. A large clump of it in the garden has flowered splendidly. Its very dwarf habit makes it excellent for edging beds, but like the *Scilla siberica* it is more showy when grown in a clump or mass. The flowers are white, shaded and striped blue.

Narcissus minimus was our first daffodil to bloom, opening its first flower April 1 (13 days earlier than last year). This is the smallest and most dwarf, likewise the earliest narcissus there is. It flowers quite close to the ground, being only about two inches high, but it is a little beauty and greatly prized because it flowers so early. It is a gem for edging the taller varieties if planted close together, but like all the rest of our narcissus we grow it in a clump. The flowers are rich yellow and it lasts for some time in flower, but it is of no use for cutting.

Narcissus minor is another early one, coming in a day after *minimus*. This has a larger flower than the preceding one, grows about an inch taller and is one of the finest dwarf varieties. The flowers are yellow and the perianth gracefully twisted.

If the weather keeps as it is just now, we will have a fine show of narcissus in ten to fifteen days. All the bulbous stock is showing well and gives promise of bloom. Our narcissus have now been left undisturbed for six years but this summer we will lift them all and spread them out, as they are getting a little crowded.

Mahwah, N. J. DAVID FRASER.

CANTERBURY BELLS—ACACIA.—CENTROSEMA.

Mrs. F. N. B. writes: "My Canterbury bells are a heartrending sight; out of three dozen plants not over six are alive; they are in a cold-frame covered up with leaves and sash put over this; the plants were raised from seed sown in April. My plants of '95-'96 came out all right with this treatment. What is the trouble?"

You made a great mistake in covering up your plants with leaves. Only the sash should have been used over the plants and the covering put on the sash on cold nights. It was the leaves no doubt that did the harm as the plants could not get enough air. These plants will stand quite a frost.

Seed should be sown about the first of July and planted in the frame about the 15th of September. These will make large plants by spring. We have nearly 200 of them, fine large plants, and we think they are the easiest plants of any to winter over as they need so little care, for they can be left covered up for a week in very cold weather with no harm to the plants.

Treatment for seedling acacia: Pot them off in small pots; when the plants get a little size pinch out the head to make them break; this can be done several times to get a shapely bush. They can be plunged out in the garden in summer. They are large rooting plants and require plenty of water at all times?

Centrosema grandiflora: This is a hardy perennial vine and needs no special treatment. Pot off the seedlings and when

the weather is settled plant out. It grows only 6 to 9 feet high and can be grown in many ways. A few plants placed together in a clump and given brush to climb on do well; or they may be trained to the house, and can also be used to screen unsightly places in or around the garden. DAVID FRASER.

ALSTROMERIAS.

I have a large lot of alstromerias from Holland which I propose to plant in a permanent bed upon a terrace which slopes towards the south. The soil is the ordinary garden loam, dark and rich.

I would be glad to know whether any special preparation of the soil is desirable and what is the best mode of winter protection against say 20° of frost. They must remain in the ground if possible.

R. N. W.

The position named is a very suitable one for alstromerias, as the drainage should be perfect, especially during the winter months. The soil should be light, not clayey.

Place the crowns from four to six inches below the surface level of the soil, the object being to get the roots as deep in the soil as possible in order that they may stand our winters. See GARDENING, November 1, for method of winter protection. Those illustrated there, protected as described, are in splendid shape this spring.

GARDENING IN NEBRASKA.

While I am writing, a harbinger of spring, a robin, is singing in a cottonwood tree close by my office. He has been here nearly ten days yet he is still alone. The ice king is slowly loosening his grip upon mother earth. While looking over my tulip bed, yesterday, I found the covering of leaves and coarse cow manure still frozen, but the tulips pushing through and showing above ground and covering 2 to 3 inches. This bed is on the east side of the house close to the foundation wall and close to this wall *Scilla siberica* is in bloom. The covering over *Clematis Jackmanni*, planted against the north side of the house, is still frozen solid, a *C. Henryi* against the house on the south side, also covered, but frost all out, shows buds pushing out; this location does not seem to suit, for, while it blooms fairly well for a 5 year-old plant, it holds no comparison with the Jackmanni, which, now about 8 years old, blooms more freely with each recurring season. [*C. Henryi* belongs to the lanuginosa type on which the flowers are dispersed and less freely produced than in the Jackmanni section, which flower in profuse masses.—Ed.] *Ampelopsis quinquefolia* is a disappointment; it grows vigorously during the forepart of the season, but all of a sudden the leaves turn brown and fall. A change of situation does not remedy the evil. [Take up the vines, dig the hole three feet deep, cut back the vines to five feet long and re-plant so that the top of the roots are fully one foot under the surface of the soil. We imagine that your plant suffers from lack of moisture.—Ed.]

I cover all roses with leaves and straw cow manure, the latter to keep the leaves from blowing away, except Persian Yellow, Queen of the Prairie, Baltimore Belle and Seven Sisters; the last one is a failure here, not hardy. The Baltimore Belle, planted against the porch on the east side of the house, eight years ago, then a two year old plant, has not lost much of its vigor, but the Queen of the

Prairie, of same age, but planted on the south side of the same porch, is getting feeble every year. I planted a Queen last spring, further north but against the east side of the house; it was a two year old plant and made a growth of about four feet which is still uninjured. I also planted a Baltimore Belle at the same time, on the north side against the house, partially sheltered by a building about 30 feet off; the growth on this has been equal to the other one and the wood looks sound so far. Crimson Rambler, bought of Messrs. Ellwanger & Barry last spring, and one of which bloomed and which made a growth of about 5 feet, I feared to risk uncovered, so laid it down and gave it an overcoat.

Since my residence here, commencing in 1871, I have not passed a winter here when the thermometer did not fall to 20° below zero. I have seen it 28° below at 7 a. m. and the snow melting at 1 p. m. on the same day. Such extremes and a nearly bare ground containing little moisture so that it cracks open, showing seams 3 to 4 feet deep, is terribly destructive to plants unprotected, hence I cover everything that can be covered, if not all over then a good covering over the roots. I have the following hybrid perpetual roses, and some not classed as such, but still hardy:

Prince C. de Rohan, Sir Garnet Wolseley, Earl of Dufferin, Jacqueminot, Marshall P. Wilder, Leveson Gower, Ulrich Brunner, Captain Christy, Baroness Rothschild, Anne de Diesbach, Paul Neyron, American Beauty, Magna Charta, Souvenir de Wootton, Francois Levet, Dinsmore, La France. Madame Plantier is the only white rose that showed sufficient vigor for a stand-by; all others classed as hardy have so far been a disappointment. Sweet Briar and the Rugosa type, also Mme. Georges Bruant, I think hardy enough to stand the winter with little protection. Persian and Austrian Yellow and the Scotch have no protection except mulch at the roots. All roses here named, with the exception of those named at the beginning of this article, are exposed and have the full sweep of the wind in the growing season. The protection given heretofore to roses under conditions the very opposite of the winter just past has not so far been detrimental to their welfare; the winter commenced with zero weather in November, then followed rain, which turned into snow, then a thaw, then more snow, thus alternating, but with sufficient low temperature to prevent growth; summing up therefore I have concluded that a change of treatment is not warranted.

WM. WEITZEL.

Albion, Neb.

[If, as stated, the climbing roses mentioned as hardy have not been injured by the winter's cold during the eight years they have been planted they should have been vigorous plants by this time. One would infer by their getting feeble every year that they have exhausted the soil at their roots.—Ed.]

FLOWER GARDEN NOTES.

The successful flower gardener will have much to do at this season of the year. Generally our springs are so short that everything is rushed and many times the work is not properly done, for instance the planting of perennial plants in the border. This work should be done with care if the best results are wanted. These plants are not like annuals; when they are planted in the border they are meant to stay for years and it pays to treat them well, as a year or two after planting will show.

With us this has been an exceptionally early spring and much work has already been done as the soil has been in fine working order. Sweet peas, annual poppies and mignonette have already been sown. The first planting of gladioli has also been put in. By planting every two weeks up to the end of June a succession of flowers can be had the whole summer. Montbretias can be treated in much the same way and should find a place in every garden. Another fine free flowering bulbous plant that can be planted now is the summer flowering hyacinth (*Hyacinthus candicans*). When grown in a group the effect is very fine; it will grow most anywhere but will repay any little extra care that may be given it. The bulbs are quite cheap and it proves hardy here without protection.

Lifting and dividing perennial plants that have become too large is now in order. Only the outside pieces should be kept; as the hearts of old plants are generally weak; they might as well be thrown away. If the plants are large rooting ones, such as phloxes or funkias, it is well to give them new soil or plant in a different part of the garden.

All the borders should now be gone over and any plants that have been heaved by the frost should be pressed into the soil or taken up and reset. All rough manure should be raked off; the finer parts can be left to work in around the plants, but the digging of a herbaceous border is better left till mostly all the plants have started into growth, as the young shoots coming through the ground are liable to be stepped upon which greatly injures them. An inexperienced person should not be allowed to walk into a border of perennial plants as he is sure to play sad havoc amongst them, more especially if bulbous plants have been largely used in the make-up of the border.

Plants in the cold frames will now need plenty of air and water. All our foxgloves, forget-me-nots, Canterbury bells, daisies, pansies and such stock have already been planted out in the garden. They were well hardened off and any little frost won't hurt them. We now have the frame room for the annuals and other tender plants.

Annuals in the seed boxes will now need much attention for if left too long before pricking off they get weak and drawn. I generally prick them off just as soon as they are large enough to handle, using 3-inch pots to hold the seedlings, putting 7 or 8 plants around the sides of the pot. This I find the best way to treat seedlings of all sorts; it takes up less room in the greenhouse in early spring than boxes would do and when you come to prick them off into boxes you have nice little plants with balls of roots that can be put in the cold frame right away, which could scarcely be done if they were taken from the seed boxes. The frames should be kept shut for a day or two and the glass shaded, giving water sparingly till they take hold of the soil. With this treatment I hardly ever lose a plant and we grow annuals by the thousands. But be sure and have covering enough for the frames as these little tender plants will not stand a breath of frost; it is well to close up the frames early in the afternoon so as to get the frames warmed up before covering. Watering should be done in the morning just as soon as it is safe to open the frame.

Dahlias can be started towards the end of the month. A frame is a good place to start them but if only a few are grown deep boxes can be used. The old roots should be divided up so as to have about

two eyes to each plant. These are better than planting out the old plants as they were lifted, and give larger flowers and not such ragged plants. If any of the plants have started into growth cuttings can be put in; these will make nice plants by fall and will flower nicely.

Before the lilies come through the ground it is advisable to give a mulch of manure; this feeds them a little and helps to retain moisture. The same can be said of the Japan iris.

DAVID FRASER.

Mahwah, N. J.

PASSIFLORA PFOORDTII.

One of the freest out-door bloomers during the summer months among the passion flowers is *Passiflora Pfordtii*. Small plants set out in a warm sheltered place after all danger from frost is past will bloom freely. They cost but little, and it is well to place two plants within six inches of each other and treat as one. They will grow ten or more feet during the season, blooming on the younger wood, so that in time the flowers, which only last one day, are placed out of reach of close observation. Therefore instead of allowing the vines to run straight up it is best to train them in a zig-zag manner and thus confine their beauty to within a close range of vision.

The name was applied from the resemblance afforded by the parts of the plant to the instruments of Our Lord's crucifixion and its attendant circumstances; thus the three nails, two for the hands and one for the feet, are represented by the stigmas; the five anthers indicate the five wounds; the rays of glory, or some say, the crown of thorns, are represented by the rays of the corona; the ten parts of the perianth represent the apostles, two of them absent, Peter who denied, and Judas who betrayed, our Lord; and the wicked hands of His persecutors are seen in the digitate leaves of the plant, and the scourges in the tendrils.

CANNAS.

For those who have no greenhouse it is best to start their cannas in the hot-bed. The tubers should be examined and any rotted or decayed portions cut out. Divide them and then plant closely. In a climate similar to that of Chicago the last of April to the first of May is early enough to start them. Give them plenty of air, endeavoring to have stocky plants rather than spindly shoots run up quickly under too much heat.

Provisions should be made to raise the glass as the plants grow up. This can be done by raising up the frame and placing bricks under the corners, but when this method is pursued, care should be taken that no cold air or winds get in from below.

Another way is to have an extra frame made to set on top of the original one, high enough to raise the glass fully a foot. The soil in the original frame should be nearly a foot below the glass at time of planting.

CANNA IRIDIFLORA EHEMANNI.

When making out your orders for cannas this spring do not overlook Ehemanni, provided you have a suitable position for it. It should always stand alone where its musa-like habit can be admired.

First of all give it a wide and deep hole, and after allotting for its use all the manure you think advisable, add one-third more. Naturally the plants you buy are small and you want effect, therefore put two plants to a hole, and water well.

Placed in full sun, under the above conditions it will grow up five to six feet, sending out very broad leaves so similar to those of the banana plant that it readily takes its place in sections where the wind splits and tears the leaves of the musa.

The flowers are suspended from tall drooping whip-like stems in shape entirely unlike Mme. Crozy and are of a light carmine color.

E.

Roses.

ROSE GLOIRE DE DIJON.

On page 209 of last issue of GARDENING Mr. Joseph Meehan tells us how this beautiful climbing rose behaves in the vicinity of Philadelphia. I can say that it proves perfectly hardy here in Bergen County, N. J., where the winters are sometimes quite severe. This winter we had 12° below zero, and when I uncovered this rose the other day it was in fine shape. I may state that previous to this winter this rose had no protection, but last summer it made such a fine growth of some 14 feet that I wrapped some burlap around the canes, and in this way scarcely any of it died back, only the points of the shoots, which were not ripened enough to carry it through.

We have this rose planted on the south side of the cottage in the garden close up to the wall, and as the thatch on the cottage overhangs the border it is planted in it keeps it very dry in winter, and perhaps this has something to do with the hardness of it here. It is well worth a trial in every garden, as it is one of the loveliest roses there are.

DAVID FRASER.

RESULTS OF IMPROPER WINTER PROTECTION.

In the March 1st issue of GARDENING I gave the results of a proper method of winter protection of roses supposed to be somewhat tender. The final uncovering, April 10, fulfilled all the promises shown two months ago. All but one late unripened shoot was fresh and plump to the tips.

We should record our failures as well as our successes, that the readers of GARDENING may profit from both experiences. In one bed where four Crimson Ramblers are grown, all were laid upon the ground, a few evergreen boughs laid over them and then coarse straw placed over the evergreens. The winter proved on an average milder than usual (although having one cold snap to 25° below zero) and we had quite a number of "wet" snow storms where the snow melted within a few days. At one spot there was a defect in the rain-shedding qualities of the covering, which allowed the melted snow water to drip down upon the wood of the roses, and I found them rotted at this point. Beyond this spot the wood was fresh and green. One plant, some twelve feet long, had only its tips at this point so that no damage was done to it, for I can easily spare a foot or so there, in fact would cut back that much anyway, but three plants were so much injured that I can look for but few blooms from them this year.

A large plant of the Empress of China, well wrapped with straw, but unfortunately laid over on the ground instead of tying up to the post, was completely ruined for a space of eighteen inches extending from within six inches of the ground to two feet above. Beyond this point the wood was in good condition. The laying over of the "bundle" opened

up the straw wrapping at the bend, and allowed the melted snow to get in and rot the wood. I have had no such trouble other seasons and can only attribute the loss to melted snow.

In the box covering the Climbing Wootton mentioned March 1 was a small knot-hole. Immediately under this knot-hole was a side branch of the rose. This side branch was rotted and presented an appearance similar to that shown by the others. The wood of the Empress of China and the C. Rambler was black all the way through at the places mentioned.

With the winter we have had both of these roses would have done better if they had not been protected; but we cannot tell ahead what kind of a winter we are to have. This experience has taught me one thing, that is to contrive some means of keeping out the melting snows. Where any box is placed over any plant, and a top used I shall see that the top is watertight. W. C. EGAN.

Trees and Shrubs.

THE WEEPING CUT LEAVED BIRCH.

I was much interested in, and a little surprised at, the remarks of Messrs. Egan, Douglas, and others in your issue of March 15th, on the Weeping Cut-leaved Birch. I live 50 miles west of Milwaukee. Here, this tree is as hardy as any of the birches. I never heard of an instance of its winter-killing in a single branch. And it has been planted very freely.

But this seems to be true, that when it reaches a height of perhaps 20 feet, the leading shoot, perfectly erect hitherto, begins to weaken and becomes pendulous. The tree ceases to push its way upward centrally, but begins to deliquesce. Is it possible that this disposition, more noticeable of late years, is due in any degree to the succession of dry seasons? A tree in my own grounds began to scatter and droop at the top, at a height of about 15 feet. I cut off the curved shoots and thus forced it up five feet further. Now it begins to show the recurring tendency again, though a perfect specimen tree otherwise. On the other hand, my next neighbor had one which was straightly pursuing its way upward at a height of 25 feet or more, when he freakishly sawed off the central shaft, saying that the tree was "too growthy." Nevertheless, the tree has climbed up 10 or 12 feet since.

I have never seen a sign of winter-killing or of dead branches from any cause. In transplanting, it is a hard tree to bring through the first season, and sometimes dries out in the second summer; but, after that, nothing is more reliable, and nothing is more beautiful.

ALBERT SALISBURY.

Whitewater, Wis.

[Mr. Egan does not claim that the tree winter-kills (see GARDENING, April 1). It is the natural habit of the weeping cut-leaved birch to assume a drooping form with age, but not generally, as is the case with Young's weeping birch, curving its leader downwards and forming an almost perfect arch.—ED.]

THE EARLIEST SHRUBS TO FLOWER.

With the retreat of winter and the coming of the warm days of spring, everyone enjoys outdoor life, and the garden pleases at that time more than at any other season of the year. The early flowerers are those that give the most pleasure

and I have thought it would be of interest to many a reader to have a list of a few early blooming shrubs. It is but the 9th of April as I write this, yet some eight or nine kinds are in flower, and as many more are showing the color of their buds.

The following sorts are now fairly in flower: Yellow jasmine, *Jasminum nudiflorum*, *Daphne Mezereum* in both pink and white colors; Cornelian cherry, *Cornus Mas*; *Prunus Davidiana*, red maple, *Acer rubrum*, *Magnolia stellata*, goat willow, *Salix caprea*; golden bell, *Forsythia viridissima* and *Lonicera fragrantissima*.

All these flower before their leaves appear. The Cornelian cherry has clusters of small yellow flowers which make a fine display, chiefly because of their numbers. The buds appear towards the close of winter, impatient, apparently for spring to come. *Prunus Davidiana* has large, peach-like pink flowers, and it is a new and most desirable large shrub, making a fine display. The red maple is not planted for its beautiful flowers as much as it should be. The trees of it, both of small and large size, are full of dark red flowers at the present time. *Magnolia stellata* is now fairly well known as the earliest of all its tribe to flower. The flowers are light pink in the bud, becoming white on expansion, and they are delicately scented.

The willow mentioned is well worthy of a place among early blooming shrubs of spring. It is best grown in shrub shape. This is the "pussy willow" as commonly known, and in England it is used as "palm" in some churches on Palm Sunday. The golden bell shrub is known to everyone as one of the most indispensable of shrubs. *Lonicera fragrantissima* has light pink flowers, and at times it expands its blossoms before winter is over.

Philadelphia. JOSEPH MEEHAN.

REPLANTING SPACE OCCUPIED BY DEAD TREES.

Around the public park in this city there are three rows of elm trees. These trees are about 100 years old, and are rapidly dying out. They vary in size from 2 feet to 4 feet in diameter. The distance between trees is about 30 feet, perhaps 40 feet.

I claim that if these trees are replaced by more elms they will not do well, for the reason that the elms now there have consumed all or nearly all the food that goes to make perfect elm trees, and when it becomes necessary to plant trees for our park it would be better to try a tree of another kind. Please let me know what you think about it through the columns of GARDENING.

New Haven, Conn. F. A. SHERMAN.

It is the practice of the best landscape gardeners to furnish fresh soil when old trees are taken out and new ones put into their places and this shows their belief that the old soil is exhausted. The probabilities are that unless the soil was largely replaced by new, elms would not do as well as the first ones did.

Nurserymen, who look altogether to the profitable part of the business, do not grow the same kind of a tree twice over in the same ground, or if they do manure is heavily applied before the second planting occurs. Indeed some of them who have land enough to spare let some agricultural crop occupy the ground for a season between the two plantings of trees. As it is probably not practicable to throw out the old soil and replace with new, nor to add to its fertility by

manuring, the chances are in favor of other trees doing better than elms.

It will be opportune to say here that in many public grounds large trees can be seen languishing for the lack of manure. The fallen leaves are raked up in the fall, and year after year goes by with no manure being given, and in time they die. There should be manure spread around the ground about such trees every fall, just as it is about a lawn, to encourage the grass, and this should extend out to a considerable distance from the trunk, as the principal feeding roots are at the extremities of the main ones, just as the principal growing points are at the extremities of the branches of the tree above ground.

THE BREAD-FRUIT TREE.

(*Artocarpus incisa*.)

This tree grows in Otaheite, where it is indigenous, to the size of a moderately large oak tree, with alternate leaves deeply gashed, glaucous and two feet long. The whole tree and the fruit before it is ripe abound in a very tenacious acid milky juice. The fruit is about the size and shape of a child's head and reticulated with hexagonal markings; in appearance it is much like the fruit of our Osage Orange (*Maclura aurantica*) a closely allied genus. The "Breadfruit" is covered with a thin skin and has a small core; the eatable part lies between the skin and the core; it is white and somewhat of the consistency of new bread. It must be roasted before it is eaten, being first divided into three or four parts. The taste is insipid with a slight sweetness, resembling the crumbs of wheat bread mixed with some starchy vegetable.

This bread-fruit tree was introduced into cultivation about a century ago; having been first brought from the South Sea Islands to Jamaica in 1793, whence it spread to other parts of tropical America. It is a point worthy of note that the expedition of the English ship "Bounty," which ended in mutiny and shipwreck on Pitcairn's Island, was undertaken for the purpose of bringing the bread fruit tree to the West Indies, which a later expedition succeeded in doing.

The bread-fruit is generally considered difficult to grow. Large cuttings root freely in sand under moist heat but the leaves must be left entire; if shortened they are likely to fail. There are several varieties of bread-fruit as of most plants long in cultivation, but botanists recognize only three species: *Artocarpus incisa*, figured in the illustration (a Costa Rica specimen), with spherical fruit and deeply lobed leaves. *A. integrifolia* (Jack or Jack-fruit) with large simple leaves and a very large oblong fruit sometimes reaching a weight of thirty or forty pounds; there is a third species very little known.

The principal cultivated varieties of bread-fruit are seedless. In Otaheite there are at least eight different kinds varying in form of leaf and fruit. The Jack-fruit is by many regarded as only a variety of *Artocarpus incisa* as its leaves are sometimes lobed and the position of the fruit changes with the age of the tree, being first borne on the branches, then on the trunk and finally on the roots, as occurs also in *Ficus Roxburghii*, a member of the same natural order.

The bread fruit is ripe in December, though in some situations the trees produce two or three per year. The fruit can be prepared for use by being boiled or fried in palm oil. Besides the use of the fruit there are numerous economical purposes to which other parts of the tree



BREAD FRUIT TREE.

are applied. The timber is soft and light and of a rich yellow color, assuming with age the appearance of mahogany. It is used to make canoes, furniture and to build houses. A cloth is made from the fibre of the inner bark; the staminate catkins serve for tinder; the leaves for wrapping up food and for wiping the hands instead of towels; the thick mucilaginous juice which exudes from punctures in the bark is used, when boiled in cocoa-nut oil, for making seams of canoes, pails, etc., water tight, and for bird-lime.

The distribution of the bread-fruit is very extensive, in the East Indies and islands as well as those of the South Pacific, and in tropical America as already stated.

Much has been said of the value of the bread-fruit to the natives of the regions where it flourishes but it is doubtful if it ever could become popular with civilized tastes in competition with our superior bread-stuffs.

J. HIGGINS.

SOME UNCOMMON PINES.

About all old residences near our large cities the pines to be seen are usually of three kinds, the Austrian, Scotch and white. At the time these grounds were laid out our landscape gardeners were nearly altogether confined to the three sorts named. What few nurseries there were imported from Europe the most of

what they sold, hence the presence of the Austrian and the Scotch pine everywhere in collections of evergreens. While these are still much planted, it has been found our pines and those of Japan are most desirable, some of our own answering the purpose of our landscape gardeners admirably. I propose to mention a few of them which have done well here.

Of native pines uncommon in cultivation I would mention *Banksiana*, *contorta*, *inops*, *resinosa* and *rigida*, and among Japanese sorts *Thunbergii* and *densiflora*. *Banksiana* is rarely seen outside of its wild state, yet it is a pine of pretty growth. In appearance it resembles a great deal the *inops*, which hereabouts is commonly called Jersey pine, because of its abundance in some parts of that state. Both of them have rather short needles, and but medium sized, rather narrow cones. And when set out with plenty of room to develop they form broad-based not over-tall trees.

The *inops* is a beautiful tree when grown singly as described, and it possesses, too, that, piney odor, so pleasing to so many persons. *Banksiana* has sprung into some repute of late on account of its ability to thrive in rather poor sandy soil, and yet produce timber of much value. *Rigida* is of much heavier appearance than the other two, being more in the way of the Austrian, and its branches have a less drooping tendency;

its name, *rigida*, seems very well applied. The *resinosa* is the red pine of the Eastern states, and I think it destined to become quite common in cultivation, it has so many good qualities. It is of heavy growth, and has long drooping needles. Fortunately, as I think, for I do not care so much for pines with stiff needles, these are soft, as soft as those of the Himalayan pine, while of a nice green color. While of rapid growth, it makes branches enough to fill up its outline nicely with foliage. It is thought to be one of our most valuable timber trees as well.

Contorta comes from the Pacific coast, and is one of but very few from there that do well here. It makes an irregular yet close growth, and it keeps its foliage of a bright green color in all seasons. I think it promises to do very well in the eastern states, as in addition to what has been said, it is perfectly hardy.

Of the Japanese ones mentioned, *densiflora* and *Thunbergii* both are very rapid growers. *Densiflora* is of much finer growth than the other, though it would not be considered fine as pines go. But *Thunbergii* is such a heavy, strong grower, that in this respect I think it outranks the Austrian, and, like the latter, its terminal buds possess the white color which heretofore so distinguished it from all other kinds. I have known a strong specimen of *Thunbergii*, not more than five feet high, to make a growth of twenty inches in a season. In general appearance it more nearly resembles the Austrian than any other, and it could be substituted for it anywhere.

Philadelphia.

JOSEPH MEEHAN.

THE UMBRELLA TREE.

Your beautiful engraving of the Umbrella Tree in the April 1st issue of GARDENING (and it seems to me that no floral magazine in the U. S. has as exquisite engravings as you do) reminds me of an avenue of these trees in May Park, Augusta, Ga., which for beauty and symmetry I believe are unequaled elsewhere; certainly in no country have I seen their equal. There are 35 or 40 of them, about 30 feet tall and 30 feet in diameter. They line up on either side of a broad avenue, touching each other in line and also across the avenue. The trees are all of the same height and are healthy.

About many of the trees are circular seats, and as the trees begin to branch 3 or 4 feet from the ground, you can easily imagine the deep protecting shade they afford in the hot summer time.

Many photographs of this avenue have been made. Locally it has quite a reputation. It justly merits that wider notice which your magazine will give to it.

N. L. WILLET.

Augusta, Ga., April 1, 1897.

China trees, orientally called azedarachs, have several pleasant characteristics: notably, perfect natural symmetry, when of the umbrella pattern, and intoxicating sweetness of bloom. A clump of China trees in blossom is unique in the American range of purples. Each separate floweret is of a slatish lilac, black centered; but the whole mass of purple bloom resembles nothing so much as those thick daubs of apparently fanciful purple trees on gorgeous Japanese paper screens. The resulting tint is of a turquoise opaqueness, but very rich, soft and lovely. Rural Georgians allege that mocking birds fall into tipsiness (we avoid the crude vernacular) from eating China tree berries; but we have yet to meet a disconcerted mocking bird. P.

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AN AMERICAN BEAUTY rose passed the winter unprotected at Highland Park, Ills., and is in good condition.

THE Society of Indiana Florists will hold its eleventh annual chrysanthemum show at Indianapolis November 2 to 6.

LET SOME of our readers who have a back yard "given up to an old barrel or two and a few heaps of ashes" read the article in this issue entitled "A back-yard garden," and see what they can do with but little trouble and expense.

ONE OF THE most prominent and enterprising chrysanthemum growers of our country has imported some chrysanthemums that are said to bloom outdoors in August and September. Before offering them to the trade he desires to prove just what they will do, and is therefore sending some to parties in New York, California, Louisiana and Egandale, Highland Park, Ill. At these widely separated places they will be thoroughly tested, and a faithful record kept of the results. Should they prove to be even September and early October bloomers outdoors they will be an acquisition to garden decoration.

When you write to any of the advertisers in this paper please say that you saw the advertisement in GARDENING.

TO INTEREST the mass of the people in the planting of trees and in the parks, Mr. William Falconer, superintendent of Schenley Park, Pittsburgh, has arranged for a special celebration of Arbor Day (April 16), in which the school children of the city are to plant a "Columbus Grove," each school to plant a certain number of trees. He has also proposed a "Children's Jubilee" on the last day of school in June, at which an attendance of 60,000 is expected.

PHILIP WICKENS, a distinguished horticulturist and pomologist, for nearly 40 years identified with the nursery firm of Ellwanger & Barry, Rochester, N. Y., died March 29. He was born in England in 1828 and came to America in 1851. In the field of pomology he was the peer of the late Charles Downing, Patrick Barry and Marshall P. Wilder. His wide knowledge of all hardy fruits was extraordinary, and his phenomenal memory of varieties made identification of all specimens submitted an easy matter. His knowledge of trees and shrubs was also varied and precise and he was passionately fond of flowers, the wildlings of the woods and fields as well as the cultivated forms among which he labored. Of a quiet and retiring disposition his temperament was nevertheless always genial. His death is mourned by a host of friends.

THE PROCESSION OF THE FLOWERS and Kindred Papers, by Thomas Wentworth Higginson, published by Longmans, Green & Co., New York; price \$1.25. One does not enter far into the opening chapter of this book of one hundred and seventy pages, before he is aware that the writer is not only a close and intelligent observer of the floral kingdom, but that he possesses a genuine love for our wild flowers, as seen and studied in their native haunts. It is the work of an enthusiastic naturalist, just technical enough to be correct, charmingly written, and bristling with instructive points. Commencing with the blossoming of the alder in early spring, the reader is led by the procession, and each participant in its turn is called to our notice, and commented upon until the aster and the golden-rod share with the berried shrubs, the glory of the passing season. The perusal of the second chapter, entitled "April Days," awakens a longing for the woods and fields, in its appeal to all lovers of nature. This is followed by a most enticing chapter on water lilies. The closing theme "The Life of Birds" is no less interesting, and shows a familiarity with the songs, habits and haunts of the feathered tribe, gained only by a long association with them.

THE ROSE IN HISTORY.

The title "Queen of Flowers" was given to the rose by Sappho, the Grecian lyric poetess, some 200 years ago, who also likened it to the "most beautiful maiden."

It was the favorite flower of both the Greeks and the Romans, the former consecrating it to Aurora, Venus, Cupid, and also to Harpocrates, the God of Silence. This consecration to Harpocrates undoubtedly led to the custom of suspending a white rose from the ceiling at convivial meetings to signify that whatever took place beneath it was to be considered confidential. Hence the term *Sub-rosa*.

In the Roman Empire at the time of Augustus and under subsequent rulers, the admiration for flowers was carried to excess. The wealthier classes took their meals while resting upon rose-leaves.

Roses were scattered upon the beds and floors of the guests' chambers, and at times of public rejoicing the streets were strewn with flowers.

Extravagant sums were spent for roses. Cleopatra entertained Marc Antony in a room in which the floor was covered to a considerable depth by them. According to Suetonius, the emperor Nero expended "four millions of sesterces" (about \$150,000) in procuring roses for one feast. How the florists of to-day wish that Nero had partaken of the charmed Apple of Life and was still entertaining!

The Romans imagined that the roots of the rose had certain curative powers in cases of dog-bites and hydrophobia, from which it is supposed came the name Dog-rose, *Rosa canina*.

There is still a very pretty custom in vogue in some parts of France, inaugurated in the sixteenth century by the bishop of Noyon, offering a crown of roses yearly to the maid of the village who should have earned the greatest reputation for modesty and virtue. The villagers have the power of naming her who shall receive it, and it is awarded with great ceremony and rejoicing.

CATALOGUES RECEIVED.

F. R. Pierson Co., Tarrytown N. Y., seeds, plants and bulbs; Shady Hill Nursery Co., Boston, Mass., trees, shrubs, evergreens and herbaceous plants; W. and T. Smith Co., Geneva, N. Y., general nursery stock; E. H. Krelage & Son, Hillegom, Holland, novelties, herbaceous perennials, bulbs, etc.; W. H. Small & Co., Evansville, Ind., seeds; Thos. Meehan & Sons, Germantown, Philadelphia, nursery stock, tree and fruit seeds; Parsons & Sons Co., Flushing, N. Y., select list of hardy trees and shrubs; Webster Bros., Hamilton, Ont., roses, carnations, chrysanthemums, etc.; M. J. Lynch, Poughkeepsie, N. Y., seeds, plants, shrubs, bulbs, etc.; Sunnyside Nursery Co., Reading, Mass., novelties and specialties in hardy vines, climbers, water lilies, etc.; Southern Iowa Nursery, Cantril, Ia., nursery stock; North-Western Seed Co., Faribault Minn., seeds; L. W. Goodell, Dwight, Mass., seeds, bulbs and plants; Seawanhaka Greenhouses, Oyster Bay, N. Y., seeds, plants and bulbs; Sunnyside Floral Nursery, Fayetteville, N. C., trees, shrubs, greenhouse plants, roses, bulbs; H. G. Faust & Co., Philadelphia, seeds; Jas. H. Gregory & Son, Marblehead, Mass., seeds, plants and bulbs; Allen D. Maxwell, Vinton, Ia., plants and fruit; Bateman Mfg. Co., Grenlock, N. J., sprinklers, force pumps, etc.; Horsford's Nurseries, Charlotte, Vt., hardy ornamentals, plants, bulbs, ferns, shrubs, vines.

Miscellaneous.

A JAPANESE FLOWER SELLER.

The perambulating florist in our illustration offers quite a contrast to our ideas, with his flowering branches standing in bamboo jars. The Japanese are great flower lovers, and the flower vender is a familiar sight in the streets of their cities. They are very fond of flowering shrubs, cut sprays being much used in decoration. But their ideas of floral arrangement are very different from ours, and our choicest decoration would be coarse and inartistic in their eyes. All their floral arrangements have an underlying symbolism which we find difficulty in comprehending, though we can recog-



A JAPANESE FLOWER SELLER

nize the main principle, that of fidelity to nature. A single branch of cherry blossoms, standing in a bamboo flower holder, will be the result of as much thought as we give to an elaborate arrangement, and a mixture of incongruous bloom is never seen, being absolutely repugnant to them. The idea that a single rose, thoughtfully placed so that stem and foliage, as well as bloom, show to advantage, is sufficient decoration for a table, an opinion offered recently by a lady of much taste, is certainly a move toward the Japanese ideal.

SOILS.

What kind of soil in its natural state contains the largest percentage of phosphoric acid?

Does nitrogen or potash predominate in a soil of black muck such as low wild meadow land? L. H.

Minnesota.

Replying to the query of your correspondent, L. H., it must be said that no very definite answer can be given. The percents of phosphoric acid, nitrogen and potash are extremely variable in such types of soil. The most general statement which can be made is that ordinarily chemical analyses show a higher percent. of phosphoric acid and potash in the clay types of soil, the sandy soils being ordinarily lower. The amount of nitrogen in the soil is much more variable than either

the potash or phosphoric acid. In the black muck soils, such as your correspondent refers to, there is usually a high percentage of nitrogen in the form of humus, but in regard to potash and phosphoric acid all that can be said of them in a general way, is that they usually contain a fair percentage of each.

The Michigan muck soils, which are used for celery growing, and which contain much more organic matter than I suppose will be found in the particular soil your correspondent refers to, contain .69 per cent of phosphoric acid in one case, .88 in another case and .46 in a third case, the amount of potash being .20, .34 and .42 per cent respectively, while the amount of nitrogen is 2.32, 1.75 and 2.53 per cent respectively contained in 61.73, 63.75 and 63.75 per cent of organic matter.

The Michigan Experiment Station gives the analyses of two bottom lands which may perhaps come closer to soil your correspondent has in mind. These contain 1.84 and 2.05 per cent of potash, and .40 and .41 per cent of phosphoric acid. The organic matter being 10.97, containing .42 per cent of nitrogen, and 9.39 contain .37 per cent of nitrogen. F. H. KING.

Agric. Exp. Station, Madison, Wis.

ONE of the most attractive catalogues recently issued is that of the F. R. Pierson Co., Tarrytown-on-Hudson, N. Y. The half-tone illustrations from photographs are well done and nicely printed.

AQUATIC GARDENING

Water Lilies, Egyptian and Japan Lotus, Victoria Regia.



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AZALEAS IN SUMMER.

"C. B." says: "Kindly tell me the best way of keeping azaleas during the summer months."

Large growers find that planting them out in a light rich soil saves much labor and the azaleas make a good growth. They are usually planted out end of May and lifted end of September. For a few plants I would recommend the following treatment: See that all the old flowers are picked off and the seed pods, which often adhere firmly to the plant. Cut back any straggling shoots and after the flowering is done grow them as warm as you can; that is encourage growth by heat and moisture for the growth they make in May and June is what will produce flowers for next year. Early in June plunge the azaleas in the open ground without removing from the pot and never let them get dry. They will want a good watering at least once every day, and a good syringing of their foliage in dry weather is most beneficial. Don't plunge them in the shade; let them have the full rays of the sun. Remove to the house before any danger of frost. W. SCOTT.



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2500 Norway Maple, 12 to 16 ft., 2 to 3 in. caliper.
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800 Sycamore Maple, 10 to 12 ft., 1½ to 2½ in. caliper.
750 Weirs Cut-leaved Maple, 12 to 16 ft., 1½ to 3 in. cal.
500 White Flowering Horse Chestnut, 10 to 12 ft., 1½ to 2½ inches caliper.

150 Purple Birch, 10 to 12 ft., 1½ to 2½ in. caliper.
20 Golden Catalpa, 12 to 16 ft., 1½ to 3½ in. caliper.
1200 Western Catalpa, 10 to 14 ft., 1½ to 2½ in. caliper.
75 Weeping Beech, 8 to 12 ft., 2 inches caliper.
500 Purple Beech, 8 to 12 ft., 1½ to 2 in. caliper.
1000 Oriental Plane, 12 to 15 ft., 1½ to 2½ in. caliper.
50 Bolleana Poplar, 16 to 18 ft., 2½ to 3½ in. caliper.
1500 European Linden, 10 to 12 ft., 2 to 3 in. caliper.

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Large stock of Norway and Silver Maples; also Carolina Poplars in any quantity or car lots. Trees and Plants, all kinds.

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In same size packets, the Seven Superb Sweet Peas described below would have cost \$3.10 in 1896, but are sold now for only 25 cents.

25 Cts. buys these Seven Superb Sweet Peas:

CROWN JEWEL. Pale standards, tinted and veined with violet-rose; the wings are creamy, slightly tinted with rose; a most profuse bloomer.

GRAY FRIAR. Entirely unlike any other Sweet Pea. A most beautiful watered purple on white ground, the heaviest coloring being on the back of standard. The flowers, of hooded form and large size, are borne three and four on a stem.

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MRS. JOS. CHAMBERLAIN. The flowers are truly enormous, and produced generally three to four on a stem. The color is very effective, a white ground heavily striped and flaked bright rose; of fine form, very striking.

RAMONA. Grand flowers of very large size, borne three or four to the stem; color creamy-white, daintily splashed with pink.

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With every collection we enclose a copy of "How to Grow High-Grade Sweet Peas by the Hamilton Method." Tells plainly just how to succeed in growing to full perfection the finest High-Grade Sweet Peas,—such as are contained in this unequalled collection.

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GIANT KNOTWEED OR SACHALINE. (*Polygonum Sachalinense*.)

The Maine Agricultural Experiment Station issues the following regarding the above named plant:

This is a hardy herbaceous perennial, six to twelve feet high, with strong, extensively creeping rootstocks. The plant is a native of an island off the Siberian coast where it grows along moist river banks. It was introduced into England about 1870 and has been quite generally cultivated in the botanical gardens of Europe. At a time of great drought in France in 1893, it was discovered that cattle would eat the leaves and tender branches of this plant and a member of the French Academy presented a paper suggesting that it might prove a valuable addition to the list of fodder plants. This seems to be the first intimation that sachaline had any forage value, but the idea was at once taken up by others and the hardness, the rapid and vigorous growth and other qualities of the plant were extolled and enlarged upon by interested parties. Within the past year or so most extravagant accounts of the value of sachaline for forage have appeared in American papers and seed catalogues.

All who have had experience with the plant advise caution in its introduction because of its very strong, spreading and persistent rootstocks. A writer in the *Rural New Yorker* who has had some experience with the plant says: "If the land will grow anything else, do not plant it. Plant corn for feed, not *Polygonum Sachalinense* unless you want trouble." A writer in *Burpee's Farm Annual* says that the farmers in this country will be terribly disappointed if they expect to realize the hopes that the glowing descriptions from Europe would seem to warrant.

This plant is described in Circular No. 50 of the Division of Botany of the United States Department of Agriculture. It is advertised in some of the 1897 seed catalogues. The advice of the Experiment Station to intending purchasers is, don't.

CHAS. D. WOODS, Director,
State College, April 3, 1897.

Solid Facts About Vegetables.

Few squash growers or squash lovers know to what extent they are indebted to the veteran Marblehead (Mass.) seedsmen, Mr. James J. H. Gregory. Always an enthusiast on the squash subject, Mr. Gregory takes just pride in the fact that he has introduced more standard varieties of this delicious and useful vegetable than any other seed grower. To him is due the introduction of the long famous Hubbard and Marblehead the widely celebrated Butman, White Chestnut, Cocoonut, and many others.

All of Mr. Gregory's enthusiasm and energy have not been expended on squashes, however, as growers of his All-Season, Deep Head and Hard Head Cabbages and of his Early Ohio and Burbank Potatoes can attest. Of late the wrinkled varieties of pears have been Mr. Gregory's special and deep study, resulting in the introduction of the splendid and widely grown Sort's Exquisite. The zenith of pea culture has been reached in Gregory's Electric Pea. Remarkably early, wonderfully prolific and of such excellent quality, it must soon entirely supersede the hard varieties of early peas. Gregory's Seed Catalogue is a practical, common-sense book that should be in the hands of every planter. J. J. H. Gregory & Son, Marblehead, Mass., mail it free to anyone that requests it.

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Lord Penzance's new hybrid Sweet Briars. Old Garden Roses; New Roses; Standard Roses, Philadelphia Lemoinei; New Lilacs; Lonicera Hildebrandtii; Spiræa "Anthony Waterer"; New Weigelas, etc.

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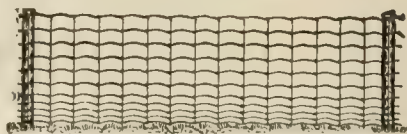
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In large sizes, for immediate ornamentation.

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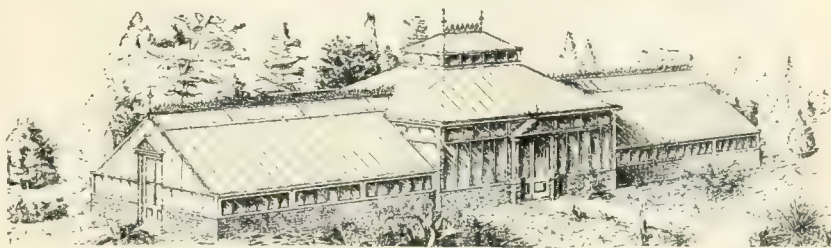
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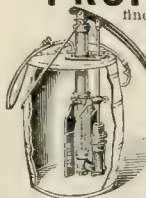
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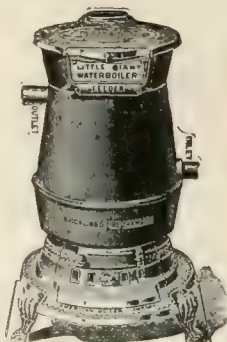


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No. 112.



THE WORLD'S FAIR WOODED ISLAND.

Landscape Gardening.

THE WORLD'S FAIR WOODED ISLAND.

The conversion of a dreary waste of land, through which a channel had been cut, on whose banks only the excavated mud in ragged piles could be seen in 1891, into that most exquisite creation, the Wooded Island, so familiar to all visitors to the World's Fair, was the finest exhibition of landscape work our country has yet seen.

To give an adequate idea of the original purpose of the designer of this planting we here print in full Mr. Olmsted's "memorandum" and invite its careful perusal. Those who imagine the art of landscape

gardening one that requires but little thought and study will be surprised to note the varied objects to be considered and provided for, and the difficulties to overcome.

We all saw the beautiful picture the Island presented and felt its quieting influence amid the bustling babble of many tongues. It seemed so natural, so soothing to our over-tired body and mind that we gave credit to nature for what was in reality the art of man.

MEMORANDUM AS TO WHAT IS TO BE AIMED AT IN THE PLANTING OF THE LAGOON DISTRICT OF THE CHICAGO EXPOSITION, AS PROPOSED MARCH, 1891.

As far as it is possible, between the present time and May, 1893, the lagoon must be made to look like a natural bayou, secluded, shallow and placid, but not suggestive of stagnancy or any form of

foulness or unhealthfulness. Its low, sterile, sandy shores must be given a rich, affluent, picturesque aspect, in striking contrast alike with that of the present ground, the shores of the great lake, the margins of the basin in the great court and the canals yet to be formed, and with the bare and prosaic shores of the ponds heretofore made in Jackson and Washington Parks. The desired result in this respect is to be accomplished largely by thick, luxuriant growths of herbaceous, aquatic vegetation along the shore, rooted partly above and partly below the surface of the water.

The best of the few poor trees now growing on the island are to be retained, and, if possible, forced by an enrichment of the soil into finer foliage. Between them and the water plants, bushes and young trees are to be introduced so as to make the island from the east appear a broad, continuous, close bank of verdure. Nearly everywhere else, except where formal terraces are to be formed near the shore, three main objects are to be had in view in the shore planting.

First, to make an agreeable low foreground over which the great buildings of the exposition will rise, gaining in grandeur of effect upon the imagination because appearing at a greater distance,

and more lofty than they would but for such a foreground.

Second, to establish a considerable extent of broad and apparently natural scenery, in contemplation of which a degree of quieting influence will be had, counteractive to the effect of the artificial grandeur and the crowds, pomp, splendor and bustle of the rest of the exposition.

Third, without losing a general unity and continuity of character in the shores, to secure whatever time, with all possible exercise of skill for the purpose, will allow of mysterious poetic effect through the mingling intricately together of many forms of foliage, the alternation and complicated crossing of salient leaves and stalks of varying green tints in high lights with other leaves and stalks behind and under them and therefore less defined and more shaded, yet partly illumined by light reflected from the water. So far as consistent with this last purpose of obscure and subdued poetic beauty through the intricate conjunction of various forms of vegetation and complex dispositions of light and shade, it is intended that the shores should have a somewhat gay and festive aspect through a profusion of foliage

of plants of small cost, sure to succeed, must be prepared for re-planting any ground where better sorts shall either be drowned or dried out so that in no case will the shores at any point appear sparsely furnished, much less unfurnished or barren.

Another difficulty is that of guarding against the danger that plants that will have been established on the shore in the summer of 1892 will be lifted or bruised destructively by the ice of the following winter. This can be provided against, in some degree, by cutting the plants closely and by laying loose litter over and about them late in the fall, by cutting the shore ice free from the central body of ice in the lagoon and by stakes or otherwise preventing it from floating off until it gradually melts in place.

Another difficulty is that as there will be several miles in length of the shore planting to be done, and as the planting season will be short, and the men employed working at disadvantage in the ice-cold water a satisfactory direction and oversight of the large number of unskilled laborers required can only be had through an extensive and elaborate system of management, carefully

patches and recesses, if necessary, on slightly raised ground, where blooming plants can be seen such as the smaller irises, *Lobelia cardinalis*, *Ranunculus repens* and *Viola cucullata*. Patches, also, of ferns suitable to the situation. Farther from the water, and to be seen through openings of the typhas and acorus, taller flowering plants may be seen, such as *Baccharis halimifolia* and *Nicotiana glauca*.

For young trees to be planted with a view to fill out vacancies in the edge of the woods on the island, it is important to use such as are most sure to be in rapid growth, with abundant and vigorous leafage, in ground well above water in 1893. It has been ascertained that for this purpose trees of the following sorts can be obtained in western nurseries, in fair condition, from 10 to 15 feet high: white maple, *Catalpa speciosa*, box elder (mogordo), Russian mulberry, American linden. To these, certain poplars and willows of natural growth can probably be added. For crowding under and facing the stems of these, good plants are to be had of the European alder, larch, American mountain ash. For the lower parts of the mass, corals and most of the common nursery shrubs can be had, 3 to 4 feet high, and various willows can be grown. *Aralia spinosa* may be used freely; also, penstemon cut short to force large leaves near the ground and water. Cat-tails, flags, etc., can be scattered at intervals in the water outside of these and occasionally still further out, water-lilies, etc.

Looking at the map, it will be seen that for long distances the shore of the lagoon is intended to be near, and with a general trend parallel to the straight walls sustaining terraces at the base of several of the exposition buildings. The strip of ground between these retaining walls and the water is to be commonly from 25 to 50 feet broad, and to have a sloping face towards the water.

Nearly all of the lagoon margin of this character is expected to be submerged for a few hours at uncertain intervals, but ordinarily the upper part will be dry and the lower part, or waterside water-soaked. Plants upon the upper part will be nearer to the greater body of visitors, and will be more closely observed than any others on the lagoon shores. They will be looked down upon from the terrace, the roots of the nearest being 7 to 9 feet; of the furthest 9 to 13 feet, below the eye. Seen from boats or from the opposite shore, the plants should appear a low thicket, or bank of verdure, more or less broken, irregular and tufty in its profile, the upper part of the wall and the parapet or balustrade of the terrace being generally seen rising a little above it. To this end low plants can be grown on this strip that, during the summer of 1893, will come to have a height of more than 3 or 4 feet.

More flowers can be shown with advantage on the upper part of the strip than anywhere else on the lagoon shore, precaution being taken, where they would otherwise be too showy, to slightly veil them from the opposite shore by a few bulrushes, culalias, or other thin plants, to grow on the waterside of them. With a little care in this respect, irises, especially versicolor, prismatic and Germanica, set from 2 to 15 feet from the wall, will be exactly suitable to the situation. Care must be taken to avoid anything like a continuous bed of such flowering plants, or any monotony of arrangement, by constantly grouping them with funkias, ferns and other plants. Large bodies of low and spreading plants of *Clethra alnifolia* and *Cephalanthus occidentalis* will be desirable all along the strip, these being valued because of the fragrance of their bloom. Besides these there are to be set profusely, adjoining the wall, on what will be the driest part of the strip, other plants from which pleasing scents will rise to visitors on the terrace. *Viola cucullata*, *Hemerocallis flava*, *Lonchocarpus brachypoda*, *Rosa rubiginosa*, *lucida*, *Carolina* and *multiflora* will, for example, serve the purpose.

To make sure that a dense growth of foliage will be everywhere interposed at some point between the wall and the water, straggling thickets may be formed of young plants of varied willows, so shortened in, or pinned down, that they will seldom rise more than two or three feet from the ground. Among and around these should be flags, acorus, calamus and bulrushes (juncus) various sedges (carex) and other waterside grass and reed-like plants. Small channels may be made to let the water flow into these whenever desirable, such channels being easily made inconspicuous.

The same class of plants, together with sagittaria and a variety of broad-leaved water plants such as saxifraga, callas, symplocarpus, nuphars and nymphars should be planted above and below the water's side.

Trees and Shrubs.

NOTES ON FLOWERING SHRUBS.

At this season of the year when shrubs are blooming everywhere, we are apt to overlook some of the best of the early ones, and as it is I think from these we



THE WORLD'S FAIR WOODED ISLAND.

age. But it is not desired that there should anywhere appear to be a display of flowers demanding attention as such. Rather the flowers to be used for the purpose should have the effect of flecks and glimmers of bright color imperfectly breaking through the general greenery. Anything approaching a gorgeous, garish or gaudy display of flowers is to be avoided. It will be easier to accomplish what is thus to be aimed at, even if flowers are used profusely, because, to the great body of visitors the lagoon plantations will only be seen from a distance and from nearly a horizontal point of view on the shore opposite that on which they stand. Boats will be prevented from closely approaching the plantations.

While the greater number of plants to be used will be such as are indigenous to the river banks and swamps of Northern Illinois, and, therefore, hardy, in order to increase intricacy and richness of general effect many are to be scattered among them that a botanist, looking closely, would know would not have grown in the locality naturally. The work is thus to be in some degree of the character of a theatrical scene, to occupy the exposition stage for a single summer. But it is not intended that the slightly exotic form of verdure to be thus used shall call, any more than the flowers, for individual notice. Rather, seen as they will generally be, at some distance, they will merge indistinguishably with other forms of verdure, and not suggest a question as to what they are or how they have come to be where they are. The line at which the water meets the shore is intended hardly ever to be seen, being screened by aquatic plants growing above and below it.

There are several serious difficulties to be overcome in realizing this design thus set forth and they must be met by original expedients. The chief of these difficulties is that of the uncertainty of the normal elevation which the water will have during the period of the exposition and the certainty that whatever this normal elevation shall be, it will fluctuate irregularly from day to day, so that what is dry ground at one time will be flooded at another. The only means of dealing with this difficulty thus far proposed to be used is that of providing plants very liberally which will stand a good chance to flourish, although their roots are sometimes high above water and sometimes submerged. Trials of numerous plants must be made in the summer of 1891 with reference to this purpose and large reserves of a class

organized in advance, with a view to this difficulty. At best, the work of planting must be expected to be done in a comparatively rude way which it will be difficult to get gardening foremen to efficiently direct. Plants, therefore, that require delicate treatment, or that do not take root readily in wet, sandy ground, can be little depended on. The plants must be set thickly and there will be little or no opportunity to cultivate them after they are set.

Another restriction on the class of plants to be extensively used is that, owing to the packing of ice along the shore in the southern part of Lake Michigan, the water often remains at a wintry temperature until after the time set in the spring for the opening of the exposition, nor does it become as warm during the entire summer as the water in many streams, ponds and swamps in the same latitude. Hence, many water plants natural to such localities are likely to grow but slowly, if at all in the lagoon. It is hoped that this difficulty may be, in some degree, provided against by making many shallow bays and pools along the shores, especially on the west side of the island. But the main planting must everywhere be done with thoroughly hardy and tough aquatic plants, common further north.

Letters on the preliminary planting plan of the lagoon are intended to indicate a little more fully and definitely the character of planting desired in different localities, by reference to corresponding letters in the schedule below. But while the plants named are to predominate it is not intended to closely restrict the planting to them at any point. Certain plants, such as bulrushes, sedges and ferns, are intended to be placed wherever they are likely to flourish among others, in order to give increased density, intricacy and naturalness of effect, and to slightly screen, without hiding flowers, otherwise likely to be too obtrusive. The various so-called pond lilies are also to be scattered somewhat freely along the edges of all waterside plantations, and on the lower parts of slopes.

Except against the terraces, as to be later explained, and at a few other points where they would rise too high for the streets desired cat-tails (typha) are to predominate in the planting, large patches of them being formed; these are to be broken and diversified chiefly with flags (acorus) and bulrushes (juncus) and irises, and among them there should be numerous little



THE WORLD'S FAIR WOODED ISLAND.

derive the most pleasure, I wish to mention a few of special interest.

One of the very earliest of shrubs to flower is *Prunus Davidiana*. Its light pink flowers are beautiful and pleasing. At this writing, April 24, it has been out of flower for over a week. But there is now in very fine display what has been sent out as *Prunus dasycarpa*, but which Nicholson makes *Armeniaca dasycarpa*, a Chinese shrub, with lovely single white flowers. The flowers are large and clear white, reminding one of an apricot, but having larger flowers. It is true that there are numerous kinds of prunus and cerasus flowering at this time, or about to flower, but there are none that I know of as good as this in flower at this time.

Another shrub now in full flower which is certainly valuable is one received from Prof. Sargent a few years ago, bearing the name *Prunus triloba*, species from

Mt. Pekin. It is now as full it as can be of lovely light pink single flowers. If it be the single form of the double *Prunus triloba*, it leads it in earliness of flowering by some two weeks.

Cerasus Sieboldi rosea pendula is fully in flower, and as is generally known, anything prettier in its way is hard to find at this season of the year. It is fully as pretty in the bud as when in flower.

I want to call attention to the old standby, *Forsythia viridissima*, not so much to say what an indispensable shrub it is, as to suggest that a little pruning helps it wonderfully. Let alone, it straggles about; prune it, and it becomes as nicely shaped as can be wished. As soon as the flowers fade, prune it into shape, and top the young shoots in summer before growth is over. More praise is due it.

Last week the mercury fell to 27° on one occasion. While *Magnolia conspicua*

and *Soulangeana* lost all their expanded flowers, the forsythia did not mind it at all. Not a flower was hurt. It will interest many to know that the flowers of the two magnolias named are often caught by late frosts, but those of *obovata*, the purple one, never are, as they open nearly two weeks later.

In sheltered places the beautiful and odoriferous *Daphne cneorum* is in bloom, its lovely pink flowers being in much demand on account of their delightful fragrance. To grow this to perfection a soil largely composed of sand is required. All plants with fine roots like sandy soil. It need not be poor. Decayed leaves, manure or fresh loam may be added, but let sand predominate. When well suited, this little evergreen flowers from April till frost, scattering flowers coming all the time after the main crop of early spring is over.

Writing of daphnes, let me call attention to an error I have noticed in print in regard to *Daphne genkwa*. More than once I have seen it stated that this Japanese purplish lilac colored daphne is fragrant. It is *not* fragrant. I cannot perceive any odor to the flowers whatever. A bush of it is in flower here now, and I am certain it is in no sense fragrant such as our *cneorum*, *Mezereum* and the greenhouse one *indica*. Nicholson makes the same mistake, as well as another in calling it an evergreen.

Philadelphia.

JOSEPH MEEHAN.

SOME DESIRABLE HARDY VINES.

Nursery catalogues of the present day present to their readers a great many kinds of hardy vines, affording an opportunity to select sorts suitable for almost any purpose desired. One of the commonest questions asked by those who desire to obtain vines is, which of the list are self climbers. So many desire vines which will cling of their own accord, without needing the assistance of string, wire, etc. The list of such, hardy, in the vicinity of Philadelphia, consists of the following: *Ampelopsis bipinnata*, *A. Veitchii*, *A. virginica*, *Bignonia capreolata*, *Tecoma radicans*, *T. grandiflora*, *T. Thunbergii*, *Decumaria barbara*, *Euonymus radicans* and its variety *variegatus*, *Vitis riparia* and other sorts, *Hedera Helix*, *Hydrangea scandens* and *Vitis heterophylla variegata*. To this list could almost be added the various sorts of clematis as their leaves have a way of attaching themselves to wires and similar supports met with, sustaining their branches thereby, but they are not self climbers in the sense the others are.

Of those named, the *Ampelopsis bipinnata*, *Vitis riparia* and *V. heterophylla variegata*, cling by tendrils, and cannot be employed on walls or where there is not something for these tendrils to attach themselves to. *Bignonia capreolata* is also one with tendrils, but it finds a way to cling to stone surfaces, and I have seen it find its way up the wall of a house as high as the third story.

Perhaps *decumaria* and *tecoma* would not prove hardy much north of this, though our winters do not hurt them. *Hedera*, the English ivy, gets through the winter unhurt, no matter on which side of a dwelling it is, though presenting a better appearance, always, when on the northern or eastern side. This vine and the Japanese ivy, *Ampelopsis Veitchii*, are the best to use where smoothness of surface is required. The others are of rougher growth, and their usefulness lies in other directions, chiefly.

Among vines not self supporting the

following are some of the best: *Akebia quinata*, *Aristolochia siphon*, *Celastrus scandens*, *Dolichos japonicus*, *Gelsimium sempervirens*, *Lonicera brachypoda*, *L. Halleana* and *L. sinensis*, among the honeysuckles; *Lycium chinense*, *Periploca græca* and the several wistarias. Of these the most used are *Akebia*, the honeysuckles and wistarias. As to hardiness, the *Gelsimium* is the only one of the list which I think would not thrive north of this. This is the lovely Carolina jasmine, which displays its yellow flowers so beautifully in the south in the earliest days of spring.

I may refer here to a slight error in GARDENING of a few weeks ago. It was stated, if I remember right, by one of its corre-

required in a place of this character. He has also produced many delicacies in the way of vegetables and fruits for his employer's table. It is about these and his methods of keeping up the succession of flowers, fruits and vegetables that we shall aim to tell in this article, from information kindly supplied by him.

The houses contain 10 divisions, the heating apparatus being so arranged that any desired temperature may be maintained in each. The conservatory contains the collection of palms, ferns, decorative foliage plants and orchids. Back of this are houses devoted individually to the rose (shown in engraving) to the orchid and to a display of blooming plants. A side bench in the latter is seen

on the benches to keep up the succession and round out the year.

One of the engravings shows a portion of a bench in the house devoted to vegetables and fruit, as it appeared April 6. Here are kept coming on in succession the fresh tender lettuce, radishes and onions for the table. This bench is 3½ feet wide and the soil is about 6 inches deep.

The first planting of lettuce is made in August, the varieties used being "Brown and Gold" and "All Season." Five rows are planted across the bench, the seed being sown thinly in the rows, which are one foot apart. The little plants are afterward thinned out so those left are about 4 inches apart in the rows. Between each row is planted a line of onion



CONSERVATORY AND GREENHOUSES OF MR. MARTIN A. RYERSON, CHICAGO.

spondents, that *Dolichos japonicus* was not hardy north of Washington, D. C. It is quite hardy here, and blooms nicely every summer, and it is used with good effect at Hartford, Conn.

And while on the matter of corrections, let me say that I have seen it stated more than once in other papers that the *Akebia quinata* would be seriously injured if pruned in spring. I have a fine vine of it running over my porch which has been pruned every spring for six years past, without any injury whatever, and in setting plants in spring nurserymen invariably cut the plants to the ground. This vine and the three honeysuckles named are among the best of all for use where shade is required about a porch or an arbor, and all of them are very nearly evergreen in this vicinity. The *Celastrus* and the *Lycium* are valued for their bright colored berries in the fall, chiefly.

Philadelphia. JOSEPH MEEHAN.

The Greenhouse.

AN AMATEUR'S GREENHOUSES.

The accompanying engravings are from a number of recent photographs taken at the private greenhouses of Mr. Martin A. Ryerson on his place at the corner of Drexel Boulevard and 49th street, Chicago.

Mr. John Reardon is the gardener in charge, and he has been very successful in keeping up the continual show of bloom

in one of the engravings, now filled with bulbous flowers and cinerarias. The long house leading from these has several divisions, devoted to various things, including carnations, lilies, tomatoes and beans in pots. At the corner is a tall cool house and at right angles to this is the house devoted mainly to fruit and vegetables.

The show house must always be kept bright with bloom and to do this requires considerable planning. The first mass of bloom in spring is supplied by the cinerarias and the calceolarias, seeds of which are sown about September 1. Some 500 plants are grown in 6 to 7-inch pots and in February, March and April they make a grand show. Next follows a mixed lot including pelargoniums, hydrangeas, fuchsias and lilies. This lot will carry us into June. The glass is then shaded on the outside and there are ready gloxinias, tuberous begonias, fancy caladiums, *Adiantum Farleyense*, etc. To have handsome foliage on the gloxinias the bulbs should be started where you can be sure of a quick-growing, close atmosphere and some shade. Under such conditions the plants will not have the rusty leaves so often seen. The erect flowering varieties have given the most satisfaction here, the flowers being not only more beautiful but produced in greater profusion.

It is now September and the chrysanthemums which have been coming along demand more attention. The earliest varieties bloom about October 10 and from that date on there is a constant succession until the end of November. December finds the primroses and cyclamens

sets of the "Golden Globe" variety. The onions grow tall and thin and do not interfere with the lettuce. The onions are of usable size in 4 to 6 weeks. Beyond the lettuce are planted five rows of radishes of the "White Tipped French Breakfast" or "Twenty Day Forcing" varieties, the rows also a foot apart. And between these rows onion sets are planted too. Successive plantings are made each week so there is a continuous supply of tender fresh vegetables for the table and with a crispness and flavor not to be purchased.

In the case of the lettuce it is from two months to ten weeks from sowing to being ready for the table. The radishes are ready in about 21 days from sowing the seed. As soon as one row of radishes is gathered another row can be planted in the same place, removing a little of the soil with the trowel and replacing with fresh. As the lettuce takes so much longer to grow, when the bench is filled additional seed is planted in pots and the seedlings planted out on the bench when room is available. A gain of some three weeks in time is made in this way. The radish seed should be planted quite thickly and the little plants afterward thinned out to about an inch apart. From fall till March 1 the vegetable garden is established in another house, as the one illustrated is kept cold during that period to rest the grapes, peaches, etc., it contains.

The tomatoes shown in another engraving are of the varieties "Early Cross" and "Thorburn's Best." They were planted in August in the bench where they were to remain, three to five seeds

to a hill, and afterward all but the strongest plant removed. The leading shoot of each plant was trained to a wire trellis, and the point pinched out when about 3 feet high. When the growth became thick it was thinned out, and when blooms appeared the shoot was pinched off about a leaf beyond it, so as to throw all the strength into the bloom. Any laterals that appeared below were cut away. As soon as the plants filled the soil with roots and were in a vigorous growing condition they were frequently fed with weak manure water. Fruit was gathered in November and the crop will continue till tomatoes are obtainable from outdoor grown plants. During December and January fruit sets sparingly and each blossom must be hand fertilized, as the usual agencies such as insects, wind, etc., seem to be inoperative during the stretch of dull, dark weather.

Cucumbers are sown on the bench about August 15, three hills to start, leaving two vines to a hill. About the middle of September another similar sowing is made, making six hills, which is all that space can be allowed for. Later a few seeds are started in fern pans, kept near the light and growing right along, and transplanted as the old vines give out.

Beans are grown in pots as shown in the illustration. The varieties are "Flageolet" and "Golden Wax." The latter has a little better flavor but the former is more prolific and sets fruit better in winter. The first lot is put in about the middle of August, consisting of about 25 pots, sowing five seeds to an 8-inch pot. The five seeds are almost sure to grow and the five plants are retained in the pot. Successional sowings are made once a week through the season.

worth White, with white berries. The house is kept cold from fall until March 1. The vines are pruned in January, and the house started up March 1 with a temperature of 45°, about two weeks later the temperature is increased to 55° and four or five weeks later it is raised to 60° at which it is afterward maintained. In the picture the canes are shown held

to throw the whole strength into the berries. The Black Hamburg first ripens about the middle of July. Muscat comes next, about three weeks afterward, and the others follow still a few weeks later. The bunches of fruit are often bagged to prevent insects from stinging and disfiguring them. The grapes will hang on a long time after they are ripe



Display of Bulbous Flowers and Cinerarias.



The Rose House.

GREENHOUSES OF MR. M. A. RYERSON, CHICAGO.

During midwinter it is 8 to 9 weeks from sowing to picking but at other times it is about 7 weeks only. The plant shown in the engraving was in bloom when photographed April 6 and on the 20th the beans were well matured.

The grapes, of which a few canes are seen in one of the engravings, are of the following sorts: Black Hamburg, which matures earliest; Muscat of Alexandria, which has the finest flavor; Gros Colman, a very beautiful berry; Black Alicante, which makes superb bunches; Charles-

down at the ends by the weight of bricks tied on. This is to induce the vines to start growths evenly at all the eyes along the canes. Otherwise the growth would be mainly at the end of the cane and the growth could not be so evenly distributed.

The leader of each vine is carried up to the ridge of the house and stopped there. When the growths that start out along the cane show the fruit bud the tip is pinched out a leaf beyond the bud. As the growth starts again from the eyes back of this place it is again pinched out,

and may be kept till fall if desired. The Gros Colman and Black Alicante improve in flavor if allowed to hang on the vines some little time.

The grape in a pot is destined to make a unique center piece for a dinner table. It is a Muscat of Alexandria and is in a 12-inch pot. When the vine was pruned the little 4-inch pot, which had an extra large drainage hole in the bottom, was slipped down over the cane. As can be seen in the engraving the pot rests on a stout stake of proper height and is secured in position by other stakes to which it is wired. Before the pot was placed in position the cane was cut diagonally part way through, the cleft was held open by inserting a piece of tooth pick, and then the pot secured in proper place, filled with soil and topped with moss to retain moisture. The grape is rooting into the small pot while still drawing nourishment from its old roots in the large pot. When the grapes are ripe the cane will be cut off below the small pot and the whole plant will be used as a centerpiece for a dinner table decoration. Of course the long growths seen in the picture will have been cut in and the plant be more compact. As will be seen the plant is now in bloom and the location of the bunches of grapes is already determined.

ASPARAGUS PLUMOSUS NANUS.

A lateral growth of the above is sent to me with the following: "Is this the kind quoted in the cut flower market. Please give instructions how to propagate it and cultural directions. Will it climb strings if it has a chance?"

The species known as *Asparagus plumosus nanus*, which is the plant of which a spray is sent, is to me a misnomer, for *nanus* signifies dwarf or small, while this

asparagus will grow 20 feet tall if given "a chance," that is if given a string or branch to twine on. It is often grown in pots and not encouraged to make a long growth because it is really of more value to the average florist for cutting in sprays of a foot or so long than in strings of 7 feet, and when in short growth has far more grace and beauty than the long ones. Nothing equals it in short sprays for mixing with a bunch of roses, and it clean discounts Maiden Hair fern or any

are showing well and give promise of a wealth of bloom. Amongst the plants in bloom nothing is giving more satisfaction than a large mass of narcissus of the varieties Sir Watkin and Queen Bess. They both opened their first flowers the 7th of April. The first named is one of the finest narcissi we have in the garden (and we have many). The flowers are very large, when fully expanded being over three inches across, the color a rich golden yellow. This daffodil is both showy and

grow some of these double primroses; the yellow, white and lilac all are worth growing. The polyanthus or bunch primroses are just beginning to flower; they are good and showy and like the primroses a stock can be worked up from seed quite easily. The same treatment as for the preceding.

Erythronium dens-canis (Dog's tooth violet) has been in good bloom of late but is now past. The large flowered one (*giganteum*) is yet in good flower; it is the finest one of all. Our native one (*americanum*) in the woods is not yet in flower.

Arabis albida (mountain rock cress) is now making a fine show; it is one of the best early flowering perennials we have. The large sprays of white flowers are borne on leafy stems and in such profusion as to almost hide the plant. It is nice for cutting and lasts for some time in bloom; it should be in every collection of hardy plants. It is easily raised and comes true from seed.

Another fine dwarf perennial which is now in full bloom is *Aubretia violacea*. This is a charming little plant with small purple flowers, and so well does it bloom that the foliage is almost hidden. The variety *Leichtlini* has rose colored flowers and is the best of them all, but a little later to bloom than *violacea*. *A. græca* and *A. Eyrei* are not yet in flower.

Adonis vernalis came into flower April 8, and is now making a fine show. It has beautiful finely-cut foliage and bright yellow anemone-like flowers at the end of each branchlet. We consider it one of the choicest early spring flowers we have.

Sanguinaria canadensis (Blood-root) although a native plant too much of it cannot be grown to associate with other early flowering plants. The handsome broad glaucous foliage alone makes it valuable, but the additional merit of beautiful, large, white flowers borne in great profusion when the leaves are just unfolding makes it specially desirable. It likes a shady nook to grow in and when once planted it will increase fast and soon make the prettiest clump of spring flowers you have in your garden.

The daisies (*Bellis perennis*) that were wintered in the cold frames are now nicely in flower and are very useful for spring gardening. Snowball is a fine large white and Longfellow has large double rose colored flowers. These will last a long time in bloom and need very little care in winter. The forget-me-nots, wintered the same as the daisies, are just beginning to flower, but it will be a week or two before they make much of a show.

The grape hyacinths, *Muscari botryoides caeruleum*, *M. azureum*, *M. concinnum*, and *M. album* are quite conspicuous in the garden. They last a long time in flower, and when grown in a mass or broad line they are seen at their best. They are easy to grow, sure to flower, and should find a place in every garden.

Scilla siberica is still in fine flower and how showy it is when planted close together. Crocuses are now past their best, and so are the spring snowflakes.

Tulipa Kaufmanniana is the earliest of our tulips to flower, opening the 7th of April. In color it is rosy white. Blooming so early makes it valuable, although we have a great many better and showier tulips in the garden. *Anemone fulgens* has been in flower for over a week and is the earliest of the anemones to bloom with us. The flowers are scarlet. They do not last a long time in bloom, and have to be grown in a sheltered place as they are not reliably hardy. The same can be said of the *A. coronaria* varieties,



Beans growing in a pot.

AN AMATEUR'S GREENHOUSES

other fern, for mixing with a bunch of flowers.

It is raised from seed and it is rather a long process to get a strong plant, so I would advise buying of a firm that makes a specialty of raising palms, ferns, etc.

The principal thing in the culture of the asparagus is to have it in a solid bed. If you want good strings this is absolutely necessary. It will thrive well in a night temperature of 50° to 55° and will absorb any amount of animal manure, like all this family. I tried to grow *Asparagus plumosus* on a bench with eight inches of soil, and after doing grandly for a few months it turned yellow. So give it a solid bed or large pot where you can feed it.

W. SCOTT.

easy to grow and is in every way to be commended. Queen Bess does not have such large flowers but as the color is distinct both should be grown largely.

The hyacinths are now quite showy but it will be a week before they are at their best; it is quite noticeable where the second grade of bulbs were used; the named varieties are far superior to the mixed, as they come in flower all about the same time, giving fine large spikes of bloom, while in the mixed ones some are in flower while others are just breaking through the ground. They opened their first flowers April 3.

The hardy primroses are now beginning to make quite a show. The common varieties are of easy culture; they like a half shady, moist situation. They are easily raised from seed and a large stock is soon worked up in this way. If sown in June they will make fine plants for the following spring. They are better if given the protection of a cold frame the first winter, for although they are quite hardy, if left unprotected they may not all flower. The double varieties in a cold frame are now giving a wealth of bloom and how beautiful they are! The flowers are very large and as double as a dahlia. Those who wish superfine flowers should

The Flower Garden.

PLANTS IN BLOOM APRIL 15.

We now have spring flowers in great abundance, the fine weather we are having at present bringing us something new nearly every day. All the spring flowers

A. stellata, *A. ranunculoides*, and *A. apennina*, although the last named one has come through the past two winters all right; however, it did not flower last spring and does not show very strong this year.

The border auriculas have come through the winter all right and are now in flower.

and it is wonderful how much hard frost these little plants will endure without the slightest injury to their apparently delicate and soft foliage. On the 19th of April we had freezing weather and high northwest winds all day; in the evening the mercury was down to 22° and the following morning as low as 16° was regis-

are now a sore looking lot. Single narcissus, along with scillas, remained perfect, so did the snowdrops, the beautiful *Puschkinia libanotica* with its many flowered stems of pale blue flowers, and also the chionodoxas. None of these were injured in any way.

On Easter Sunday (April 18) the weather was very mild and pleasant. A stroll over the herbaceous grounds revealed the fact that many of the early spring flowers had made their appearance. Hellebores were in full bloom yet and the individual flowers are purer in color and of better size than they are in midwinter; they should have a partly shaded place and must not be disturbed; the longer they are left alone the more flowers will be produced annually and the mass of dark green foliage will effectually cover the ground at all seasons of the year. In the open border, fully exposed to the sun, these interesting plants will do tolerably well after two or three years; we have one old patch planted in such an exposed position, but the best and most perfect flowers are gathered under the shade of overhanging trees in another place. The rue anemone, *Thalictrum anemonoides*, *Anemonella thalictroides* or *Anemone thalictroides* (which of the three names is right I do not pretend to know) is out with its delicate pinkish tinted white anemone-like flowers almost as soon as the snow disappears and does not stop blooming for several months. At first hardly any of its pretty adiantum-like foliage is visible, but a week or ten days brings it out in full beauty; it is very early, being always out in bloom long before the lovely little hepaticas, which are usually considered the very earliest of spring flowers.



Tomatoes

These plants need a well drained situation as they are not quite hardy and are the better for the protection of a cold frame. Ours are growing on a raised border about a foot above the level and when the place was prepared for them some stones were put under them to assure a good drainage. They are well worth giving a little extra care as they are a beautiful class of plants. They are also well adapted for growing in the greenhouse for early spring flowers, but should be wintered over in a cold frame and brought in as needed.

Pansies that have been left in the frames are now giving plenty of flowers and come in handy for cutting. Her Majesty narcissus opened its first flowers April 13; it is of dwarf growth, the flowers a light yellow, the trumpet large and expanded. Wm. Goldring is a lovely daffodil; the perianth is very long and snow white while the trumpet is a clear bright yellow.

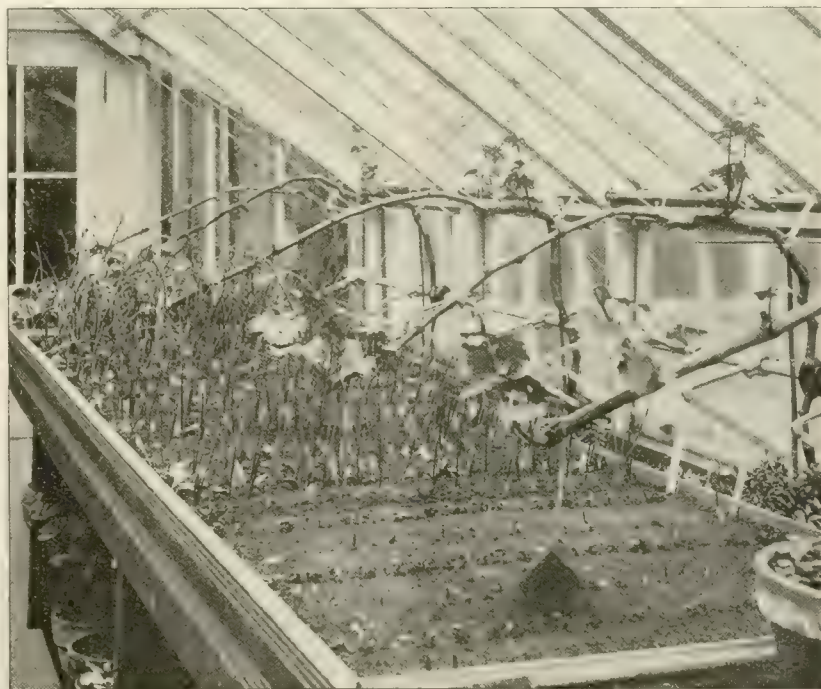
Amongst other things in flower *Magnolia stellata* is very fine; its large white flowers are highly scented and it is the earliest of the magnolias to flower. *Lonicera fragrantissima* is a very free flowering shrub with small pink flowers which are very fragrant. The yellow jasmine, *Jasminum nudiflorum*, has been in flower for some time, but is now about past.

Mahwah, N. J. DAVID FRASER.

PERENNIAL SPRING FLOWERS.

Soon after the first warm sunny days in April some of the plants in the herbaceous grounds begin to move fast; even if the nights are frosty and the thermometer drops occasionally below the freezing point they continue to push their tiny young leaves and flower buds through the slight covering or mulching which was placed between the rows in late fall,

tered; the sky was clear and the sun shone bright on to the stiff, frozen little beauties, still all of the delicate young growth came through all right, and to-day no ill effects of the untimely severe cold snap can be noticed on any of these plants, although hyacinths and crocus, which were in bloom at the time and planted close by,



Radishes, Onions. Lettuce, Grapes.
AN AMATEUR'S GREENHOUSES.

These latter we may grow anywhere, in the border or on the rockery, in the shade or in full sun; even on dry, bare spots under trees, where hardly anything else would grow, they will readily establish themselves and always are satisfactory; it is really a pity that so few of them are grown. The delicate pink or

the almost white and the blue shades are all so pretty, the flowers spring up so profusely from every crown, however small it may be, forming a thick, dense mass of bloom, everybody must admire them. The double varieties are of course more expensive than the singles, but they are really desirable things for the spring garden; the long stemmed flowers cannot fail to attract our attention when they are surrounded by their shiny, bronzy, young tri-lobed leaves. Most of the doubles are also larger in size than the single flowers, and many shades in pink, red and blue are offered in catalogues, one firm in Europe offering 64 distinct varieties. As a plant for edgings low can equal it; the low and compact growth and the almost evergreen foliage make it especially well adapted for this purpose. The plants should not be divided very often; leave them alone for six or eight years—the older they get the more flowers will be produced, and a broad mass of them is far more desirable and ornamental than a thinly planted row.

Quite a lot of primulas were out in full bloom, especially the hybrids of the *acaulis* section in an endless variety of colors. A patch of these which had been slightly mulched over with long manure last fall is decidedly ahead of other plantings which have been left bare, though none of the latter have died out or suffered in any way during our rather snowless winter; only the plants are behind the others, only showing a few flowers scattered over the bed. A light open soil is best suited for them and partial shade is beneficial. *Mertensia virginica* (*Pulmonaria virg.*) is a charming free flowering plant, lasting in perfection for quite a while. Though a native of our country it is well worth a place in the border and should be planted freely; its pretty blue flowers are exceedingly ornamental and showy in early spring, and if we take the precaution to plant some taller, later flowering subjects between them the ground will not be bare or barren of bloom after they cease flowering and their foliage dies down. *Pulmonaria maculata* is also in flower and its remarkable silvery dotted foliage is very attractive, not only while its many purple flowers are in perfection, but also afterwards for the remainder of the season, as it retains its characteristics until fall. Even the ordinary old *P. officinalis* has its charms as an early spring flower, perhaps to a majority only because of its earliness and we would not think much of it later in the season; a patch of it, intermixed with single trumpet narcissus, is a grand sight at present and worth seeing. All pulmonarias, and the allied *mertensia* too are better off in a little shade and should have a rather moist situation, although they will succeed fairly well in an open border.

Arabis alpina is almost fully in bloom in a southern exposure, the large white umbels covering the foliage completely. It is one of the most desirable and very easily managed early spring flowers, not requiring any special soil or care, does well in any situation and is particularly adapted for planting in dry and sunny situations on the rockery. *Aubretia deltoidea* is also in bloom. They carpet the ground with their purple, blue or lilac flowers. What was said of the easy management of the arabis holds good with the aubretias; any soil or situation will answer for them; they continue to bloom until the end of May, and then the little compact rosettes of leaves will neatly and effectually carpet the ground over for the rest of the year, though I would advocate

interspersing some loose, taller growing plants over them. A number of named varieties of this charming little plant are in commerce, among them *Leichtlini*, *Eyrei*, *græca* and *olympica* in various shades of purple, except *A. d. Leichtlini*, which is rosy crimson.

Waldsteinia trifolia has a dense mass of yellow, strawberry-like blossoms and looks fine and showy so early in the year; the foliage also resembles that of the strawberry and looks bright and dark all through the season; it grows about 6 or 8 inches high and forms a compact mass of leaves. Wherever we plant them they will succeed; any soil will answer for them. The large leaved *Saxifraga* (*Megasea*) *cordifolia* and several others, with their bright pink curved spikes of flowers appear early and last over a month or six weeks; the broad, glossy and leathery foliage is evergreen and highly ornamental either in the border or in the rockery. The pretty little *S. Camposii*, with its delicate large white flowers and deeply cleft or sometimes divided leaves, is fully out now and will last to the end of May; it is a small low-growing plant from 4 to 6 inches high and will succeed in any ordinary border or in the rockery.

The plants mentioned above are among the very earliest of spring flowers and will be found to flourish and grow under all circumstances in common garden soil of any description with the least possible care. Later in the season we may have larger and more gorgeously colored flowers, but in the early spring days when most all places are yet devoid of color we appreciate these small flowers so much more because they are the first signs of renewed life in the flower garden, coming on weeks before any of the shrubs or trees show an inclination to push their flower buds through the protecting scales in which they were safely encased since the cold of last autumn caused the leaves to relax their firm hold and drop to the ground.

Another week will give us opportunity to observe a far greater variety of hardy plants in bloom, many of which are apparently entirely dormant at the time of this writing.

J. B. KELLER.

Rochester, N. Y.

TYPES OF CLEMATIS.

In the cutting back and general treatment of the clematis it is well to know to what section or type any specimen we may possess belongs. In order to have in the volumes of GARDENING a means of identification in this line, we publish here with a classified list of those now being grown here and in Europe. This list includes the hybrids mainly. It is well to mention the fact that *C. montana*, which blooms on the old wood, is more of a failure in cold climates than the *patens* and *florida* types, as it is more difficult to save its old wood over winter.

MONTANA TYPE.

Climbing, winter and spring-bloomers, with medium sized flowers, in aggregated axillary clusters on the old or ripened wood, blooming in May. This includes *C. montana* only.

PATENS TYPE.

Climbing large-flowered spring-bloomers, flowering from the old or ripened wood, in May and June. Includes the varieties Albert Victor, Edith Jackmann, Fair Rosamond, Lady Londesborough, Lord Derby, Lord Londesborough, Miss Bateman, Miss Crawshaw, Mrs. Geo. Jackmann, Mrs. Quilter, Mrs. S. C. Baker,

Mrs. Villiers Lister, Sir Garnet Wolseley, *Standishii*, Stella, The Queen, Vesta.

FLORIDA TYPE.

Climbing large-flowered summer-bloomers, flowering from the old or ripened wood. The following varieties all bear double flowers and bloom in June and July: Barillet Deschamps, Belle of Woking, Countess of Lovelace, Duchess of Edinburgh, *Fortunei*, John Gould Veitch, Lucie Lemoine.

LANUGINOSA TYPE.

Climbing large-flowered summer and autumn-bloomers, flowering successively on short lateral summer shoots, the flowers dispersed. Bloom July to October. Includes Beauty of Worcester, Blue Gem, Duke of Norfolk, Enchantress, Excelsior, Fairy Queen, Gem, Grand Duchess, *Henryi*, Jeanne d'Arc, Lady Caroline Neville, La France, *lanuginosa candida*, *Lawsoniana*, *lilacina florabunda*, Lord Neville, Louis Van Houtte, Mrs. Hope, Otto Frœbel, *paniculata* (small flowered), Princess of Wales, *purpurea elegans*, Robert Hanbury, Sensation, Venus Victrix, William Kennett.

VITICELLA TYPE.

Climbing large-flowered summer and autumn-bloomers, flowering successively in profuse masses on summer shoots (less continuously than the Jackmann type), July to October. Includes *Ascotensis*, *Hendersoni*, Lady Bovill, Marmorata, *Viticella rubra grandiflora*, *Viticella venosa*, *Viticella alba*.

JACKMANNI TYPE.

Climbing, mostly large-flowered, summer and autumn-bloomers, flowering successively in profuse continuous masses on summer shoots, July to October. Includes Alexandra, *flammula*, *flammula rosea purpurea*, Gipsy Queen, Guiding Star, *jackmanni*, *jackmanni alba*, *jackmanni superba*, Mme. Edouard Andre, Mme. Grange, *magnifica*, Mrs. Baron Veillard, Prince of Wales, Rubella, *rubro-violacea*, Snow White *Jackmanni*, Star of India, *Tunbridgensis*, *velutina purpurea*.

VIOLETS.

Many amateurs have an ambition to grow violets in winter in a cold frame, but it is seldom we see it done with success in localities where the thermometer drops to 10° or 20° below zero. To have any success at all the frames have to be banked around with hot manure and a heavy covering put over the glass at night, the manure to be renewed when cold. This is rather too much work for most amateurs considering the small returns. But we can have violets in early spring and lots of them. Our frames have been giving us plenty of flowers since the 1st of March and will keep on doing so for some time to come. Cuttings for next spring's flowering have already been put in the cutting bench, but many runners were already rooted and only needed to be potted or put in a box. They will be planted out in the garden about the 1st of May. The runners will be kept off all summer, except a few, and when we lift them in September the runners will be cut off of these too, but they will be nicely rooted little plants, and will bloom well the following spring if planted in a frame, in fact they always give larger flowers than the old plants, but not so many of them.

Violets need plenty of water and air and this should be seen to. The soil in the frame should be well enriched with decayed manure and the plants set so they nearly meet. The frame should be



Grape being grown for Table Center Piece.
AN AMATEUR'S GREENHOUSES.

quite low, say 18 inches at the back and 10 inches in front, the surface of the soil 6 to 8 inches below the glass. The tall growing ones, such as the California, should be planted at the back and the dwarfier ones in front. Don't try to force them but give as much air as possible and keep the ground worked up around the plants. Cover up at night and put a little long manure around the frame to help keep the frame warm. A little frost won't hurt them much, but if it can be kept out so much the better. Towards spring when the days begin to lengthen the violets will come along fast and from March till the end of May you will always have some flowers.

Among the varieties we have in flower one of the best and freest bloomers is Lady Hume Campbell. With us this is a clean violet and we regard it as superior to Marie Louise, the latter variety sometimes having the disease very bad though in spring it generally outgrows it and flowers well. Duchess of Edinburgh is a little lighter in color than Lady Hume Campbell, the flowers are large, the plants of dwarf, compact growth and a very free bloomer. Marie de Savoie is a lovely dark blue violet and has the largest

flower of any we have. As this is the first year we have had it we only have a few but next spring we will grow as many as we can get, so well do we like it. Tricolor plena has very small flowers and is scarcely worth growing except for variety's sake. Glorie de Bourg la Reine is a fine dwarf with single, dark blue flowers, very large and highly scented; one of the best singles. California is the freest flowering single we have; a tall grower with fine foliage, and a good point about this violet is its fine long flower stems. The Millet is another good dark blue single, very free flowering, and in every way a splendid violet. A few other varieties in the frames are doing nicely but the names have been lost and as they were imported from France only last spring we cannot name them.

The new double hardy English violet is giving a wealth of bloom in a sheltered nook in the garden. The flowers are very dark and quite large. It stands the winter without any protection and is well worth growing. Another fine sight is a few hundreds of the Millet that were left over in the garden; while filling the frames we found we had too many and as they were giving a few flowers in the fall

they were covered up with a few strips of burlap; when cold weather came some long manure was put over this and when they were uncovered this spring they were found to be in fine shape. They began to flower about the 15th of March and to day you could pick flowers by the thousands as the plants are a perfect sea of blue.

DAVID FRASER.

Mahwah, N. J.

BONE MEAL—WOODBINE.

Mr. M. E. Pollard asks: "Is bone meal a good fertilizer with which to top dress roses? I have read that it should be worked into the soil long before it is used."

If your roses are grown in a greenhouse planted out on the benches, a very light coating of bone meal will help them greatly. Some of our largest rose growers use this altogether and with fine success. Put on only enough to cover the soil and stir it well into the soil, so that when watering it will not be washed over the sides of the benches. If your roses are in pots we would not advise using it as a top dressing. Liquid manure in some form is far better. Pulverized sheep manure makes a fine safe liquid for amateurs to use; one pound to five gallons of water; it can be had quite cheaply from any of the seed stores.

"My woodbine grows nicely in the early part of summer but about the first of July the leaves begin to turn brown as if bitten by an insect. What is the cause, and is there a remedy?"

No doubt your vines are infested with red spider, a little insect scarcely visible except on close inspection. The only remedy is water, and a good force at that. If you have a hydrant put the hose on and give the under side of the leaves a good drenching. As these insects are always on the under side of the leaves it may be a hard job to get at them and some insecticides may have to be used. A pound of whale oil soap dissolved in six gallons of water makes a good and safe wash. Apply with a syringe or force pump.

DAVID FRASER.

SOMETHING FOR VASES.

A subscriber from Devonshire street, Boston, says in a well written communication in which he fully describes his veranda, etc., that he has two vases exposed to strong winds during summer. He has stopped up any drainage from the vases because they are the cause of rust. He has tried pandanus and a few other plants with not satisfactory results and now wants suggestions as to what will do well.

If the writer knew how large these vases were he could write somewhat more to the point. I can scarcely believe that any winds in Boston during summer are strong enough to hurt the ordinary plants that are used for summer decoration. A pot that will just go inside the vase can be used and kept off the bottom by a few bricks or blocks of wood and the water emptied out once a week or so as has been done by our correspondent. One of the best plants to stand the wind is *Dracena indivisa*. It is graceful in appearance, as hardy as an artificial plant of tin, and is difficult to kill with either a drought or a deluge. A good variety of geranium, one color in each vase, would look very well. So would the Crozy cannas. Of all the palms that will stand the sun and wind the best is *Phoenix reclinata* or *dactylifera*.

WM. SCOTT.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH
— BY —

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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Rust and paint can be removed from the glass roofs of greenhouses by dissolving lye in boiling water and when cool swabbing the glass with a bunch of rags tied to a pole.

TREATMENT OF NEWLY IMPORTED PLANTS.

I shall soon receive from England some dormant potentillas and pyrethrums. Will you kindly tell me how I ought to treat them when they arrive. C. F. R.
Massachusetts.

If the plants were well packed and arrive in good condition, with the packing around the roots still moist, they may be planted at once. If the packing is dry, and the roots look shrivelled, or if any of them were young plants from slips started in pots, and partially in leaf, soak them for an hour or more in luke-warm water, and then plant.

We presume your pyrethrums to be hybrids of *P. roseum*. Make your soil light and open and raise the bed so that when settled from the digging it will be four to six inches above the surrounding level. They require perfect drainage.

The potentillas may be planted in any good garden soil on the ordinary level. Pyrethrums may be planted one foot apart, but the potentillas are better at eighteen inches to two feet apart.

THE twenty-fifth biennial session of the American Pomological Society will be held in Columbus, O., September 1 to 3. P. J. Berckmans, Augusta, Ga., is president and G. C. Brackett, Lawrence, Kans., is secretary.

A PROJECT to establish an international botanical garden in one of the islands in the Gulf of Mexico seems likely to be realized. Prof. John M. Coulter, of the University of Chicago, and editor of the *Botanical Gazette*, is active in the matter.

THE TIME is not far off when those having hot-beds shall have emptied them and have finished their planting. Prudence suggests potting a few to be plunged into some spare space of ground to be held in reserve to replace any lost by accident or other causes, in their regular beds. Having done this, the owner's wants are supplied. As a rule some plants are left over. Don't throw them away. We know of one writer for GARDENING who each season when his planting is done, sends postal cards to those whom he knows would like to grow flowers did their means allow them even a hot bed. He requests them to call and get some seedlings. The invitation is cheerfully responded to, and thus plants that might otherwise have been thrown away are taken to homes where they receive a loving care, and whose blooms brighten and cheer an appreciative household. Be charitable with the treasures God has committed to our care.

MR. J. A. PETTIGREW, superintendent of parks, Boston, says in a letter: "But speaking of planting in poor soil to prevent late growth (for material not over hardy where it is desirable that the wood be well ripened before winter sets in) suppose you try potash, as you know probably, the people who profess to know these things claim for potash, the fibre building function. Stable manure induces soft growth and leaf development. That is because of the nitrogen in it, and it contains hardly anything else. Manure is considered an expensive fertilizer. I am using a composition: Three per cent nitrogen, eight per cent phosphoric acid (soluble) and ten per cent potash. That combination is supposed to be about the correct caper for tree and shrub food. The grass grows fast enough and I don't fertilize it only as it may happen to be under trees and shrubs that are being fertilized. To insure a genuine article I buy subject to an analysis of an analytical chemist. At Brooklyn I used the same combination with astonishing results. I shall never use stable manure again if I can have this fertilizer, excepting for mulching."

A GENTLEMAN had a lot facing an improved village road, which he fenced and used for pasturage. From the lay of the land, and the surroundings, he readily saw the most appropriate situation for the barn, when the place was to be improved. He used this barn site for storing manure whenever easily obtained, which had to be hauled in from the roadway, necessitating a gateway on the street line. He chose a place for this gateway that seemed the proper one to be eventually used. In this lot are several fine old oaks, and the teams in delivering the manure had to pass by or between them. The teamsters naturally chose the most direct route to the rear, and soon formed a wagon track road. The place is being improved and the line of the naturally formed roadway is the one now adopted for the permanent one. It is

one of the most graceful roadways that ever came under the notice of the writer. Every curve is a graceful and easy one, and the large oaks stand as sensible sponsors for each departure from a straight line. When amateurs are laying out a driveway that is curved, and are in doubt as to the outcome, drive a team over the course a few times letting the horses have their own way as much as possible and if they "cut the corners" of the curves too much, the form is not proper.

The Fruit Garden.

SPRAYING FRUIT TREES.

Since the advent of spraying fruit trees a great deal more interest is taken in the fruit orchard than there had been for many years. It is again possible to have crops of apples, pears, plums, grapes and other fruits. Formerly what with insect depredations and the ravages of fungi, there was too much exertion required of the average orchardist. I have had much to do with those who set out fruit trees and I find a general dislike on the part of an owner to have to give attention out of the common run to trees he has purchased. The temptation to have fruit, and the comparatively easy work of applying spraying mixtures, has led to the general adoption of spraying as part of regular orchard work.

Large orchards call for special machines for the work, but amateurs who have but a tree or two can get along very well with an ordinary garden hand syringe. There are not many sprayings required in a season. Three or four are sufficient, the exact number of times depending somewhat on the weather. If rains closely succeed a spraying the operation would need repeating very soon, as much of the mixture would be washed off.

Spraying is for two objects, to destroy and repel insects and to do the same with fungus. The apple, plum and cherry are the fruits mostly affected by insects, and the pear with fungus, though the foliage of the first named trees is very often the subject of various blights. The foliage and fruit of the grape both suffer from fungus. How much the grape grower is indebted to fungicides for his crop is now generally understood.

What is generally called Bordeaux mixture is what is used for fungus attacks, and Paris-green for insects. This mixture requires the following ingredients: Sulphate of copper (blue stone), lime and water. The mixture formerly contained much more blue stone than is used nowadays, and the tendency is still to use less rather than more. One of the latest works issued gives the proportions as follows: Six pounds blue stone, four pounds quicklime to 40 or 50 gallons of water. My own experience has been limited to the spraying of pear trees, and in that case I used but five lbs. blue stone to 100 gallons of water, and the mixture did its work most effectually.

For the insects which injure the fruits spoken of, Paris green is used. It requires about one pound of it to 400 gallons of water.

There is no loss of strength to either mixture by using a combination, which may be made by adding four ounces of Paris-green to fifty gallons of Bordeaux mixture.

Many persons practice the giving of the first spraying just before the buds burst in spring, again as soon as the

flowering is over. Should no rain occur the next syringing need not be until three to four weeks later. One more at a like interval is usually sufficient for the season.

Pear tree leaf blight usually occurs in the early days of July. Trees previously sprayed will not develop blight. Should it appear on any tree, it can be quickly controlled with Bordeaux mixture.

Has it occurred to any readers of GARDENING to try the growing of the foreign grape out of doors, with the assistance of a fungicide? I do not see why it is not practicable. It would, perhaps, be necessary to do as the French do, graft them on our native vines, as the roots of ours are more phylloxera resistant than those of the foreign ones. JOSEPH MEEHAN, Philadelphia.

SMALL FRUITS.

The roots of currants and gooseberries of bearing age, should not be disturbed by cultivation or hoeing until after fruiting season. Apply a mulch of coarse manure or straw, thick enough to prevent the growth of the weeds, in and about the hills and rows.

Look for the currant borer at this time. When the leaves start, affected canes commence to wither and die. Cut out the affected canes below the black center and burn at once.

All newly set plants should be thoroughly cultivated, weeds must not be allowed to grow for they consume valuable plant food and the moisture so necessary to the young plant.

Frequent surface cultivation makes the natural food of the plant more available, prevents escape of moisture and holds water in store for summer use.

The root is the foundation of the plant, it should be stimulated to early and continuous growth by the best care in the beginning.

If plants have failed to grow, set new ones in their places at once, one can not afford to have missing hills.

Blackberry and raspberry bushes should be trimmed severely, cut back at least one-third or one-half; severe pruning increases the size and quantity of the fruit.

M. A. THAYER.

Miscellaneous.

NATURE-STUDY FOR PUBLIC SCHOOLS.

Nature-study, or seeing familiar things in a new light, is a valuable factor in education. How many people can explain, so that a child can understand, why water puts out fire, why some young squash plants bring their shells out of the ground on their backs and others do not, or show the difference between a leaf bud and a fruit bud of the apple, or tell from whence all the house flies come? The world is full of such common things, about which people do not inquire. Yet, such subjects can be made very interesting to children, and they can be taken up in the schools, not as an added recitation, but as a rest exercise once or twice each week to relieve the monotony of the school room and later be made the theme for a language exercise. Here are two important faculties that may be brought into exercise—accurate observation and the power of expressing definitely what is seen.

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200 Golden Catalpa, 12 to 16 ft., 1½ to 3½ in. caliper.
1200 Western Catalpa, 10 to 14 ft., 1½ to 2½ in. caliper.
75 Weeping Beech, 8 to 12 ft., 2 inches caliper.
500 Purple Beech, 8 to 12 ft., 1½ to 2 in. caliper.
1000 Oriental Plane, 12 to 15 ft., 1½ to 2½ in. caliper.
50 Bolleana Poplar, 16 to 18 ft., 2½ to 3½ in. caliper.
1500 European Linden, 10 to 12 ft., 2 to 3 in. caliper.

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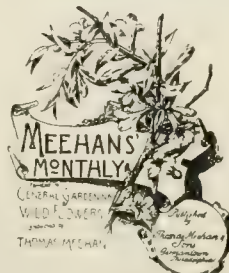


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cultural Extension bill, undertaken to assist, free of expense, all teachers who wish to introduce this work into their schools. All parents and teachers interested in this work are asked to send their address for more detailed information to
CHIEF CLERK, COLLEGE OF AGRIC'URE.
Ithaca, N. Y.

ASTRONOMY AND HORTICULTURE.

The following appeared in a recent issue of the *Montreal Star*:

Astronomy is the science of agriculture and production, the soul of trade and commerce. For example let us take at random a quantity of ordinary common seeding peas, and let us divide it into four equal parts, keeping with care each part separately. Then when the season approaches, let us select any spot of ground suitable for vegetation, and let us sow the peas of the four parts as follows: The first part, the first or second day of the new moon, the second part near the same spot, the first or the second day of the second quarter, the third, the second or third day before the full moon, and the fourth, the second or the third day before the moon disappears.

Here is the result: the peas sown under the new moon will grow very fast and will blossom most beautifully, but will not bear fruit, those of the second part will blossom and will bear very little, those of the third will not only blossom beautifully, but will also bear fruit in abundance, and those of the fourth will scarcely rise from the ground. The same rule as to time will apply to all kinds of grain, and also to trees for each operation from the nursery to the pruning of fruit trees.

Is the rule given by the writer of above generally followed by gardeners and others.
GEO. C. IRELAND.

Ontario.

I do not know of any gardener who pays any attention to the moon. The sowing of seeds proceeds from day to day as time and weather permits. If the plantings on the last day of the moon resulted in the failures the writer states follows it, they would be often heard of. And what about the nurserymen and the landscape gardener who plant hundreds of thousands of trees day after day, new moon or full moon?

A German gardener once lived near me who had a belief of this kind. When the moon was in its first half, he called it "coming up" and he planted nothing then as he believed it resulted in an "up growth" viz., all top and no root. But when the moon was in its last half which he called "going down" he worked like a beaver, planting everything he could, as "going down" meant the formation of roots, and good roots he knew were the foundation of good plants.

However it is not worth while discussing what can so easily be tried, doing with a quart of peas what the writer referred to suggests.
J. M.

GARYOPTERIS MASTAGANTHUS.

A trial was made of this beautiful fall-blooming shrub as to its hardiness at Highland Park, Ills. One plant was mulched at the roots in the ordinary manner and the top well wrapped with straw. Another plant near by was slightly mulched and left unprotected. Both plants were winter-killed, roots and all. The soil in which they were planted is a clay loam. Both were strong plants set out last spring. A third plant was taken up last fall, planted in a pot and wintered in a cellar, where the temperature ranged from two below zero to forty above and is in excellent condition, the eyes breaking out all along the wood.

The plant is such a handsome one, blooming at a time when flowers are scarce, and sold at such a low price, that it is well worth growing even if we lose it at the end of the season. However it takes so kindly to cellar treatment that we can easily carry it over the winter in that manner.

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Please try to get up a club of **Five for One Dollar**.

With every collection we enclose a copy of "How to Grow High-Grade Sweet Peas by the Hamilton Method." Tells plainly just how to succeed in growing to full perfection the finest High-Grade Sweet Peas,—such as are contained in this unequalled collection.

Florists and agents who wish to make a business of selling these collections will be supplied at the rate of **\$2.00 per dozen collections**, by mail, postpaid, but without the premium packets. We have prepared this collection to extend our trade and still further increase the popularity of **SWEET PEAS,—the people's flower**. The price is too low to yield us any direct profit, and whether one dozen or one hundred dozen are ordered, we cannot send the collections, by mail, postpaid, for less than \$2.00 per dozen. By express the price is \$1.80 per dozen, or \$15.00 per hundred collections. It would be easy work to "make money and do good" by selling these collections. We will supply **Lithographed Leaflets**, showing these Sweet Peas painted from Nature, free of charge to those who order one dozen collections or more.

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1. \$15 will be given to the person sending in a paper best answering this question: "Why and how should horticulture be taught in our rural schools?" Competition open to the world.

2. \$5 will be given to the boy or girl under 18 years of age sending in the best report of the growth and development of any fruit, vegetable or ornamental plant or tree, planted and cared for by him or her during the season of 1897.

3. \$5 will be given to the boy or girl under 18 years of age giving the best report of the exercises held at his or her school on Arbor Day, 1897.

Competition for the last two prizes is limited to those living in the twenty-three most northern counties of Illinois (district of the Horticultural Society of Northern Illinois).

Papers should be plainly written, on one side of the paper only, and enclosed in an envelope with the name and address of the writer upon a separate slip of paper. Papers should be in the hands of the secretary not later than November 1, 1897. The prize-winning papers will be read at the annual meeting of the Horticultural Society of Northern Illinois, which will be held at DeKalb, December 1 and 2, 1897. Every boy and girl enclosing a two cent stamp with their report will receive some new variety of vegetable seed or fruit plant during the fall of 1897, or spring of 1898. Address all communications to the secretary, Dwight Herrick, Rochelle, Ill.

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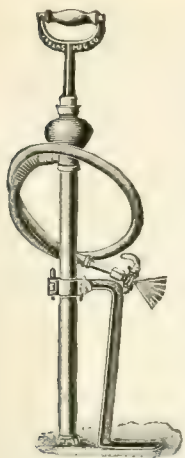
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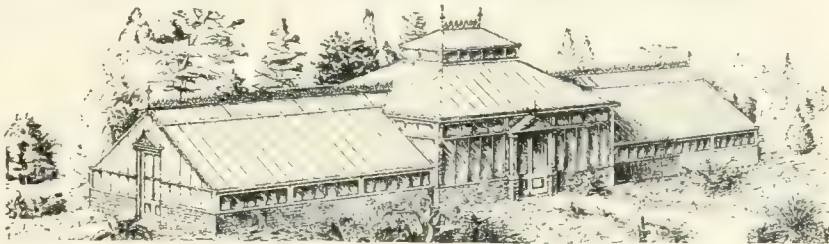
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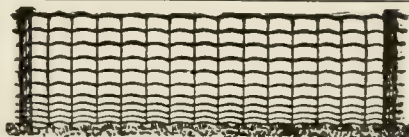
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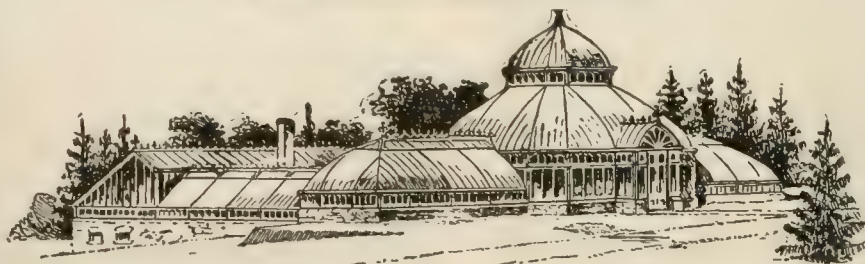
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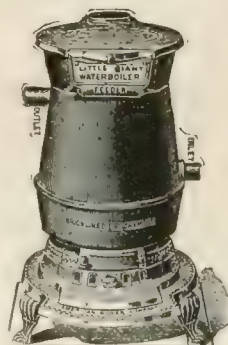
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No. 113.



A POND OF AQUATICS.

Aquatics.

A POND OF AQUATICS.

But a few seasons ago the space now occupied by the aquatic pond shown in the engraving was a tract of boggy, unsightly and apparently worthless land, and the picture shows how such an undesirable place can be transformed into a spot of surpassing loveliness. The charming effects presented on the margin are produced by the judicious planting of bog loving shrubs and herbaceous plants.

The pond illustrated was constructed and planted in Clifton, N. J., by Mr. Wm. Tricker, a specialist, but similar effects can be produced at a moderate cost by any one having water available. And it

is not necessary to have the tender aquatics. There is a large list of hardy water lilies and the bog loving shrubs and plants used are mostly hardy natives. Materials for effective planting on the margin of a pond can be gathered from the marshes or from the margins of natural ponds if the plants are properly lifted for transplanting, though it is generally the cheapest in the end to obtain the plants from the specialists who better understand the proper methods of gathering and the right time to hunt for desirable specimens. But when some experience with this class of plants has been had additions can be made through personal collecting, and tramps afield in search of desirable specimens of native bog plants will be found exceedingly interesting.

The Flower Garden.

PLANTS IN BLOOM MAY 1ST.

Since my notes of the 15th of April the spring flowers have improved greatly, and many more interesting little beauties have made their appearance. The month of April has been an exceptionally dry one, scarcely any rain the whole month. On the 20th and 21st a heavy frost paid us a visit, the thermometer registering 21°. We feared for our narcissi, but they came out all right, although they were in full flower. The only things that were hurt were the garden lilies, the speciosum varieties suffering the most. It is wonderful how much frost these spring

flowers can stand. Tulips were not affected at all, but some varieties of hyacinths were partly spoiled though not so much as one would expect.

The narcissi are now about at their best; although a number are past, later ones have come on to take their places. Among some of the best are *N. Johnstonii*, Queen of Spain, a good free flowering variety with large yellow flowers; *N. Santa Maria*, yellow, perianth nicely twisted, a showy and fine narcissus; *N. Her Majesty* is of dwarf habit with large light yellow golden flowers; *N. Emperor* comes next to Sir Watkin in size of flower, the color deep yellow and trumpet very large; *N. conspicuus* is a very showy flower, large yellow, the edge of its cup orange scarlet; *N. maximus* has very large flowers, the trumpet being much expanded while the perianth is nicely twisted. Among others in flower are *N. Minnie Hume*, *N. Autocrat*, *N. Leedsii*, *N. cernuus*, *N. Humes concolor*, *N. moschatatus* of Haworth, *N. Burbidgei*, *N. John Bain*, *N. bicolor grande*, *N. General Murry*, *N. Vanessa*, *N. Cynosure*, *N. Magog*, *N. amabilis*, *N. S. A. de Graff*, *N. Barnardi*, and many others. *N. poeticus ornatus* is one of our favorite flowers and is to be seen in all parts of the garden. It is so useful for cutting and lasts so long that it should be largely grown in every garden. All the narcissi named here are hardy with no protection, only requiring to be planted and left alone for four or five years, when they can be lifted and spread out a little. A great many of them are so near alike that for the amateur a selection has to be made, but all are beautiful.

Among the choicer tulips in flower *T. Florentine* has been quite conspicuous; the flowers are deep yellow, the petals partly recurved, very highly scented. Another fine tulip of the same class is *retroflexa*; a mass of this in flower is making a fine show; the color is a bright yellow, the petals long and pointed and elegantly recurved, in every way a fine tulip. *T. oculusis* a dark crimson tulip with a glowing black center; the color is so rich it should be in every collection. Golden Eagle has large yellow flowers edged crimson, petals pointed, a lovely tulip. Striped Beauty is rose, flaked crimson and white, a large and showy tulip. *T. sylvestris* is a very sweet scented tulip with large showy yellow flowers, one of the best. *T. Eichleri*, very large handsome brilliant scarlet flowers, a beautiful tulip. This is about all the single species of tulips that are in flower as yet, but in a few days we will have a great many more among the common kind. Pottebakker yellow, P. scarlet and P. white are three fine tulips, in fact for bedding tulips it is hard to beat them, and they are fine for cutting as they grow so tall.

Of other plants in bloom none is more showy than *Arabis alba*; although this has been in fine flower since the 5th of April, to-day it is still at its best and looks as though it would last for some time yet; this we consider one of the best early spring flowers we have. *Phlox subulata* and its variety *alba* are now a carpet of flowers; so freely does it bloom that it completely hides the plants; it is very showy and lasts for some time in flower. The variety *alba* is in our opinion the best; its pure white flowers, when the sun is on them, are truly beautiful. *P. procumbens* is also in fine flower; the color is lilac or violet, not so showy as *subulata*. Forget-me-nots are now a mass of bloom, and how useful they are for spring gardening! A stock is easily gotten up. There is quite a difference in

the plants that were wintered in the frames and those left outside; the first are very large plants, while the others are scarcely worth garden room. *Arabis lucida* is a little white flowering plant, but as it lasts such a short time in flower it is scarcely worth growing.

Iris pumila and its varieties are now in fine flower; this is a dwarf early flowering iris well suited for edgings of borders or beds as it grows only a few inches high. *Iris cristata* is also in flower; this is another beautiful dwarf iris with handsome light blue flowers, one of the best dwarf sorts. *Iris Chamæiris* is making a fine show, its bright yellow flowers being quite conspicuous; it grows only a few inches high and like the others makes a nice edging plant. *Anemone ranunculoides* came through the winter all right. It is of very dwarf growth and has small yellow flowers; it is not very hardy and should be well protected in winter. *A. fulgens* is still in flower and is one of the showiest of the spring flowering anemones. *Fritillaria Meleagris* has been very fine of late, but is now about past. Its checkered drooping bell-shaped flowers are odd and beautiful. The variety *aurea* is a striking and lovely flower, the color yellow checkered with black and brown spots. The newer one *F. recurva* is not yet in flower. *Papaver alpinum album* is a beautiful poppy, its dwarf habit of growth making it a very desirable edging plant; it is also useful as a cut flower, the flower stems being over a foot long while the plant is only a few inches high. *Papaver nudicaule* and its variety *alba* are also nicely in flower; it is much like *alpinum* though a freer bloomer, but all three are to be commended, as they are very useful in spring gardening. *Leucium æstivum* (summer snowflake) is now about at its best. Its snowdrop-like flowers on long stems, make it useful for cutting and it lasts for some time.

Aubretia violacea is now a carpet of blue. For edging this plant is very desirable and it lasts a long time in flower. *A. Leichtlinii* has carmine-rose colored flowers, and is considered better than *violacea*, but both should be grown. *Trillium grandiflorum* is now in flower. Although this is often found plentiful in the woods a few plants in the garden don't go amiss for cultivation improves it greatly, as shown by the large size of the flowers. The hardy primroses and polyantheses are now a grand sight. Of these plants we grow a vast number; in half shady places or naturalized in the grass they grow nicely and are quite hardy. The strains we have in flower are Sutton's show and Sutton's prize, and although we raised them all from seed there is scarcely one but what is worth growing. This summer we will raise a few thousand more from seed, sowing them after the rush of spring work is over. *Bellis rotundifolia* is a small free-flowering daisy. We had it associated with the blood root (*Sanguinaria canadensis*) and this made a pleasing combination which was much admired. The English daisies are now at their best. For a free flowering showy plant they are hard to beat for they are just a mass of flowers. Pansies that were left in the borders all winter are now at their best. Associated with the forget-me-nots they make a pleasing show and will last till the end of June. Those in the frames are used to cut from, and we find it pays to grow a frame full for this purpose. *Mertensia virginica* (blue bells) is a showy and free flowering plant with drooping panicles of handsome light blue flowers fading to pink, a plant of easy growth

which will grow in the shade or the open. It is a good and a useful plant. Lily of the valley is now beginning to flower but it will be some time before it is at its best.

Among shrubs in flower none is more showy than *Forsythia Fortunei*; it makes a big spreading bush and has handsome pendulous trumpet-shaped bright yellow flowers; where a mass of it is grown it is quite conspicuous and can be seen at a great distance. *F. suspensa* with us is not so free flowering as the preceding but both are good and coming so early in spring makes them very desirable shrubs. *Spiræa Thunbergii* is now a cloud of white flowers. This is one of the showiest of all the spiræas and for cutting is the finest thing we have at this season. When out of flower the foliage is much sought after to use with flowers in vases and a few plants in the reserve garden come in handy, as they save the others from so much cutting. *Spiræa prunifolia flore plena* is a fine double flowering sort; it has white flowers arranged all along the smaller twigs, which makes it very showy.

DAVID FRASER.

Mahwah, N. J.

DICENTRA SPECTABILIS ALBA.

The white variety of the so-called bleeding heart, though an old plant is not very often seen in gardeners. It is not such a rampant free grower as the ordinary pink one, but its many good qualities should not be overlooked and I, for one, consider it among our most charming and desirable spring and early summer flowering plants. Whether we plant it in the border or along the edges of a shrubbery it is very effective, and will, if room enough is allowed the plants, annually spread out more and its gracefully arching racemes will attain the same size and length as those of the well known colored variety. It is true that *Dicentra spectabilis* loses its attraction soon after flowering; the foliage turns yellowish and partially dries up, but by planting some later blooming, spreading and bushy hardy plant nearby, the decaying and discoloring leaves are hidden from direct view and may take their own time to ripen up without being noticed.

The white dicentra was always considered a weak grower and slow to increase perhaps merely because we all expected to divide and propagate it as fast as its near relative and the plants were never allowed to remain undisturbed long enough to regain their full strength and vigor. The desire to work up a stock prompted frequent dividing and the young stock grew weaker with every division until at last their cultivation was entirely discontinued by the discouraged grower as unsatisfactory. Their peculiar and sensitive nature in respect to repeated divisions is now better understood and ample time is allowed the plants to gain back their full vigor before an attempt is made to disturb their roots in any way. Newly divided plants will not produce a very strong growth the first season, better the second, but it usually takes a third year to obtain a good specimen and if not wanted for division then, they should be left undisturbed for some years after until the crown or center shows signs of decay, which may not be until 8 or 10 years after first planting. Older clumps divide more readily than 3 or 4 year olds and the separated pieces if not cut up too small, generally start with two or more good healthy growths, while younger roots make a more feeble



NEW AMARYLLISES. [SEE PAGE 262.]

start, though perhaps more eyes have been left to each piece.

I remember that years ago there was quite a demand for this plant, that many have tried repeatedly to establish it without success and after several discouraging attempts, gave up further trials. In most all these cases only small pieces, which had no strong old roots attached to them, and newly divided, too, could be obtained to begin with; there was very little hope for success with such a weak starting, though under very favorable conditions, and where the young plants received the best of care for several successive years, the planter was rewarded for his trouble by the rare sight of a well developed specimen of this delicate but most beautiful variety, such as we may meet at rare intervals in some of the few older places. For the last few seasons, inquiries for this variety have been more frequent again and as stronger plants are now usually furnished by the trade, better success is insured even with only ordinary care, so perhaps we may look for a general run on an old but deserving hardy plant.

Rochester, N. Y.

J. B. KELLER.

PERENNIALS TO PRECEDE BEDDING PLANTS.

Last fall soon after the frost destroyed the foliage beds in the grounds of one of our patrons, we were asked to replant these beds so as to present an attractive appearance in early spring from April to almost June 1, or until coleuses and other bedding plants could be planted out safely. These beds had been planted formerly with various hardy spring flowering bulbs but this time we suggested a trial of early blooming hardy herbaceous plants for some of the beds and the suggestion was reluctantly accepted; fear was entertained that no perfect bed could

be produced with newly planted perennials, yet they turned out to be highly satisfactory, as we were particularly careful in the selection of the plants as well as in the digging and handling of them, retaining a little ball of earth on each, and as the ground in the beds was rather dry at the time of planting, giving them a thorough good watering after finishing. Of course these were not plants like those generally sold in commercial establishments by the dozen or hundred, but good and undivided healthy clumps as they grew in the border and perhaps it would be difficult to pack and ship such plants safely by rail any great distance.

Two narrow strips or borders cut in the lawn each side of a path, which in summer are usually filled with alternantheras and echeverias, were thickly planted with dwarf double daisies in different colors, hepaticas, *Erysimum pulchellum* and *Lotus corniculatus*, all low and pretty things. In an oval bed of rather large dimensions, *Doronicum plantagineum*, *Lupinus polyphyllus*, *Dicentra spectabilis*, *Pæonia tenuifolia*, both the double and the single flowered varieties, *Alyssum saxatile compactum* and *Polemonium reptans* were effectively used. *Phlox subulata* in several colors and the pink *P. amcena* with *Iris pumila* and *Papaver nudicaule* formed a decidedly pretty little bed. The white *Dicentra spectabilis alba*, *Gladiolus communis*, *Primula acaulis*, *P. officinalis* and various colored hybrids of primulas planted together in another, are a mass of bloom just now, excepting the interspersed *Gladiolus communis* which will have come on a little later. We could have planted all the beds with various spring flowering hardy plants without any difficulty but we were not allowed to do so for a beginning and bulbs had to go into the other beds.

One advantage of hardy plants over the bulbs is their prolonged flowering season; crocuses, scillas, snowdrops, hyacinths, narcissuses, tulips, etc., only last a short time in perfection, while most perennials keep on sending up new flower stems for weeks, and in some cases for months in succession. These beds are expected to present a decent appearance until the end of May when bedding plants will take their place. The perennials can safely be removed at that time to an out of the way place in the back garden, divided if necessary and grown on with ordinary care until fall, when they would be in excellent condition again to be used in the same beds for next spring.

We are not necessarily obliged to use the same plants in the same combinations every year; even with this small collection we could arrange the beds differently each season, but there are a great number of other early blooming desirable plants, which may be used instead, such as the arabis, *Aubretia deltoidea* in variety, *Alyssum alpestre*, several of the *erysimums*, *pulmonarias*, clumps of *Daphne cneorum*, *Mentensia virginica*, the beautiful *Anemone nemoralis*, *Ranunculus asiaticus* and *R. europæus*, the highly ornamental broad leaved *Saxifraga cordifolia* and varieties, *Dicentra eximia* and *D. formosa*, *Iberis sempervirens* and *I. correaefolia*, *Caltha palustris* fl. pl., dodecatheons, corydalis, a number of irises, all the *doronicums*, *Omphalodes verna*, the oriental poppies, the auriculas, trilliums and many more.

In most places the flower beds are left entirely bare from October to May, the greater part of the year. The beds are perhaps cleaned and forked over nicely in the fall to be left alone until the time for summer planting arrives again—nearly eight months of bareness. In early spring everybody is anxious to plant the beds as

soon as danger of frost is over, but in our climate it is never safe to do any of this work before the end of May and we really lose the best and most enjoyable part of the season. In every place, no matter how small it may be, if only one flower bed is maintained, room can be found for a reserve bed to grow enough hardy plants such as were mentioned above to fill the bed in autumn.

Rochester, N. Y. J. B. KELLER.

LOBELIA GHERARDI—OXALIS.

Do you consider *Lobelia Gherardi* a good perennial?

Can you tell me how to get the common *Oxalis alba* and *O. rosea*. When I send to the florists for these they send me *O. hirta*, *O. Bowei*, etc. The sorts I want make a profusion of light green foliage

species but forms roundish fleshy crowns ($\frac{1}{2}$ to $\frac{3}{4}$ inches in diameter) above the ground and may be propagated quite rapidly by taking off the side growths as they appear on the main or older crown; they root easily in sand without any heat if kept shaded for a while. As a pot plant it certainly looks very graceful when well grown; several crowns should be planted in a rather flat and wide pot; they do not require any season of rest, keep green all the year round and bloom profusely. A few of our florists here in Rochester still grow a limited number of both varieties.

Wood ashes are considered a very valuable manure for beds or anywhere else in the flower garden. They contain various potash compounds and mineral substances which can readily be absorbed by most growing plants, yet generous appli-

form plants for early flowering, but for planting out purposes those started a month or more later did very well. Then his plants were well fed from the start, and given plenty of room to grow. The fuchsia is a plant which quickly resents insufficient food and space.

This recalls to mind the fine fuchsias grown by Edwin Lonsdale in the early days of his florist's career, in Philadelphia. His plants were the best seen there for many a day, and were the talk of the place. And the secret of his success was, he used to say, that he never permitted them to want for space, but shifted them from pot to pot as soon as the roots touched the sides of the pots.

I am sure from what I have experienced and what I have seen that a bed of fuchsias on a north or eastern side of a building, or anywhere where but little sun will reach the plants, is entirely practicable. Make the soil good; light loam and manure will do, and give plenty of water, and overhead syringing at night, and I am sure that entire satisfaction would result.

JOSEPH MEEHAN.

Philadelphia.

NOTES AND COMMENTS.

FORSYTHIA FORTUNEI.—For the part two or three weeks this has been the most attractive of all flowering plants. I have it trained to a single stem for about ten feet high until it got to the top of the trellis when it was allowed to branch and has covered a space of six feet overhead. The stem of the plant was kept spurred back so that it is a long line of beautiful yellow flowers, while overhead the branches are literally covered with bloom. Generally it is grown as a bush and with proper attention in pruning and pinching it makes a fine shrub. The little attention required to make it a climber is amply repaid in the beauty of its flowers in early spring. My plant is simply magnificent and I look upon it as one of the finest of all climbers. It is perfectly hardy in central and western New York, its flower buds never getting winter killed, while *F. viridissima*, contrary to the experience of Mr. Joseph Meehan, at Philadelphia, almost invariably comes out of the winter with the flower buds all killed. With an experience of more than 30 years both on the east bank of Seneca lake and at Geneva, getting full blooms only once in six or eight years, I felt obliged to discard it, but its loss is fully made up by *Fortunei*, which is fully as good and always reliable in blooming in the early spring.

GLOIRE DE DIJON ROSE.—At different times during the past thirty years I have procured this fine rose, but although occasionally making a fair growth, eventually it has been winter killed. I know of three plants in my immediate neighborhood which have stood out, perfectly hardy, entirely unprotected for many years. These plants are all budded on the Manetti stock. Is this rose on its own roots, defective in root growth and hence more hardy if budded. Can any of the readers of GARDENING give any light on the subject.

COUNTESSE MARNIESSE is being pushed with quite a flourish of praise. If it is the old rose grown under this name twenty or more years ago, it cannot be praised too highly. The description seems to be the same, except that as I used to know it, it was a much more vigorous grower, attaining some five or six feet in height.

CLEMATIS.—The classified list in GARDENING is very satisfactory. A few additions, however, will be required and probably will be made now that the



A BEECH TREE OVER 700 YEARS OLD.

with small white or pink flowers. I like them in my plant room in the winter, but somehow I have lost them and try in vain to get them again. Half a dozen pots overflowing with the lovely light green foliage make a charming addition to a little room full of narcissi and pretty winter things.

Is it always useful to put wood ashes on the beds, or only under certain circumstances, and what are they? A. D. P.

I am not able to say anything about the desirability of *Lobelia Gherardi*, for we have never tried it in our borders. If A. D. P. succeeds in keeping them unharmed through next winter, no doubt many of your readers would be thankful for a report in this matter.

As to the common *Oxalis rosea* I must say that these plants are not grown to any extent now in commercial establishments, but some old florists still stick to them. Formerly these plants were used quite largely in spring for hanging baskets and small vases, but they are not as profitable as some other things of quicker growth. The white variety is a stronger grower and taller than the pink one; both naturally are spring and early summer bloomers, but by generous and proper treatment may be made to flower nearly all the year round. I have known them originally under the name of *Oxalis floribunda*, which afterwards was changed to *rosea*. It is not a bulbous

cations year after year in succession to the same beds would perhaps not be advisable; a change in manures now and then will be found beneficial to the soil as well as to the shrubs or plants in it. K.

FUCHSIAS IN SUMMER.

The fuchsia give so much pleasure when it is in bloom that many persons regret that they do not see it flowering out of doors here in summer as it does in England. I have thought a few hints on its summer cultivation would be of service to many readers. As may be supposed, the reason why it fails planted in the ordinary way here, is that there is too much sun and too dry a heat for it. It wants a cooler place than the usual garden site affords.

Some few years ago, Mr. Emory, who was at that time gardener for Chas. Dissel, Wynnewood, showed me some of the nicest fuchsias I had seen for a long time. It was midsummer, yet the plants were as full of flowers as they could be. They were planted in a border not far from the proprietor's dwelling, and according to my recollection but little or no sun could reach them, being on the northeastern side of the house. I have not forgotten the instructive lesson, for though knowing well enough what sort of a situation the plant should have, it takes an object lesson occasionally to keep the matter well in mind. Mr. Emory rooted his fuchsia cuttings soon after New Years, to



SPECIMEN CALCEOLARIA COLOR PURE DEEP YELLOW. [SEE PAGE 262]

attention of florists and others is called to the matter.

HESPERIS MATRONALIS FLORE PLENA ALBA.—For many years I have in vain sought in the catalogues for this fine double flowered Sweet Rocket, and when procured it has invariably proved single. Some parties do not have and probably never have had the plant, although in their catalogues. Why will not some of our enterprising florists import and propagate this fine herbaceous plant? From the inquiries that I have heard made for it, it would undoubtedly sell well.

GEO. S. CONOVER.

Geneva, N. Y., May 5, 1897.

ALSTROMERIA—OXALIS.

Mr. R. M. Wills asks: "How far apart should alstromeria and *Oxalis floribunda* be planted and how long will they bloom?"

The alstromeria should be planted a foot to fifteen inches apart and about six inches deep. Plant in a well drained sheltered part of the garden. As this plant is not reliably hardy it is well to put a box or a few boards over it to shed the rains, although with us it proves hardy with no protection. It comes in flower in June and lasts into August, sometimes giving a few flowers in September.

Oxalis floribunda we generally grow as a winter blooming plant, but if your plants have been kept dry over winter they will bloom nearly all summer if planted in the garden. Select a warm, sunnyspot and plant about a foot apart. Don't plant in a shady place, as the flowers won't open except when the sun is shining on them.

DAVID FRASER.

HARDINESS OF LONIGERA HALLEANA.

This sweet flowering honeysuckle is so often recommended for a permanent vine that my experience with it may be interesting. I have had it for some five years planted in among some of the common Dutch monthly and *L. Periclymenum* (European Woodbine) on a wire fence.

In this position some of the vines of *Halleana*, where protected somewhat by its hardier companions, have lived over winter, but as a rule it dies to the ground, comes up and blooms. In order to feel perfectly satisfied that my plants were *L. Halleana* I ordered three strong plants of the Parsons & Sons' nursery in the spring of '95. I grew these in the wild garden under moderate culture, letting them trail upon a bank, where the situation in winter is more favorable than if exposed upon a trellis. The next winter and the one just passed killed them to the roots.

W. C. E.

NARCISSUS—TULIPS.

Mrs. C. D. Watermann asks: "Should narcissus and tulip bulbs be left in the ground all summer, or should they be taken up and stored away till next fall?"

If your bulbs have been planted in beds which are to be filled with summer bedding plants it is well to lift them, but let them remain in the beds as long as you can. When you do lift them cut the heads off a little and plant them out in a line in some out-of-the-way place where they are to remain till the foliage dies; they then can be taken up and stored away in some airy place till planting time. Again if they are planted in a herbaceous border we would advise leaving them alone for a few years. Some people take up all their bulbs every year, but we don't, as we think they are better in the ground. A point to note is not to mulch bulbs of this sort that have been left in the ground, as this causes them to grow in the fall; in fact we never mulch any of our bulb beds and our success with them could not be better.

DAVID FRASER.

SICANA ODORIFERA.

This comparatively little known member of the gourd family belongs to the intertropical regions of South America. It was described by J. M. de C. Vellozo in *Flora Flaminensis* (Rio de Janeiro) as *Cucurbita odorifera* and by Naudin, a

French botanist, in *Ann. De. Nat. Hist. Ser. 4 xviii. L. 8.* under the name *Sicana* and to him it is credited by Bentham and Hooker, *Genera Plantarum*.

It is a smooth tender annual with most of the characteristics of the gourds. Leaves 5 to 9 lobed, smooth and shining. Flowers of two kinds, fertile and sterile, large and yellow. Fruit oblong-ovate, edible and fragrant.

It may prove an acquisition in cultivation as many of our common *cucurbitaceae* originated in hot countries

J. HIGGINS.

Trees and Shrubs.

A BEECH TREE OVER 700 YEARS OLD.

The accompanying engraving is from a photograph of a beech tree known to be over 700 years old. It is one of the collection known as Burnham Beeches, near London, England. Owing to the peculiar form of this veteran tree it is popularly known as "The Elephant."

NOTES ON SHRUBS AND TREES.

One reads so much of the nuisance of the sassafras because of its suckering habit that but comparatively few persons plant it as an ornamental tree. It should be known that it does not sucker at all unless it be chopped down, in which case numerous suckers will appear. Plant a tree of it and let it grow on undisturbed and not a sucker will be seen. To me the sassafras appears one of the most ornamental of trees. The late Jean Van Volxem, a nurseryman of Belgium, told me once that this tree was much valued in his country for its peculiar beauty of foliage. When full of its light yellow flowers, as trees here are as I write, April 30, it is one of the most attractive trees of the season.

Both the American and the Japanese Judas trees are now in flower. I was surprised to hear a lady say to-day that she preferred the native one. This has lighter pink flowers than the Japanese. It is a taller and a freer grower as well. The Japanese is but a shrub, in fact, while the native one is quite a small tree. Those who have visited the battlefield of Gettysburg at this season of the year will remember the display made by some large specimens of the native sort at "The Devils' Den."

A native shrub but rare in collections, as indeed it is in its wild state, is *Fothergilla alnifolia*. It bears small white flowers, in a dense, almost round head, and in great abundance. It is closely related to the witch hazel. The flowers are in good display at the present time.

I think but few persons know of the great variety existing of the *Pyrus Japonica*. The common red one is in all gardens, but there are all shades of color from orange to crimson; as well as pink and white ones. A white one, known in collections as *P. nivalis*, is a particularly attractive shrub at this time.

Every year when the *Magnolia obovata* is in flower, as it is now, I think that it does not seem to be known as much as it deserves to be. On an average the blooms of *M. conspicua* and *Soulangeana* are frozen off every other year by a late freeze. It happened this year, and in 1895, and often before that. The *obovata* does not open as early, and the week or ten days later, which it is, seems always sufficient to ensure it from freezing. What appears

to be a variety, called *gracilis*, behaves in the same way. The latter kind has darker purple flowers than the other, and will thrive farther north.

What a show the blood leaved Japanese maple is at this season of the year! It seems a great favorite about this city, and many is the visitor asking what the handsome shrub is they see. This is the *Acer polymorphum atropurpureum* of catalogues. In early spring it surpasses any other shrub or any tree in the deep

The Greenhouse.

LACHENALIA NELSONII.

Lachenalias are beautiful small South African bulbous plants well adapted for window and greenhouse decoration, and none more so, of the numerous species and varieties of the genus, than the subject of the illustration, *L. Nelsonii*. It



LACHENALIA NELSONII

red of its leaves. This maple loves partial shade and moisture. It is often set in entirely open places, but when in such situations its very thin leaves get browned badly at times, something that does not happen to it when in partial shade. Later on in summer the foliage loses much of its color, in common with similar colored leaved shrubs. The best of all to maintain a good color to the very last is *Prunus Pissardi*. JOSEPH MEEHAN. Philadelphia.

THE TULIP TREE IN THE SOUTH.

The tulip tree, in a warm climate, discovers a fatness which we had not observed among tulip trees of the north. In moist bottom lands of the Georgia pine belt, a full blooming tulip tree fairly drips with liquid balm, about the end of April, spattering the broad foliage, and attracting a legion of bees. Though botanists call the liriiodendron a single surviving species, one may readily perceive its kinship with the greater magnolia. Their bark is decidedly of the same general texture; and their shafts have a similar stateliness, right high and lordly. The main outlines of a tulip tree blossom also closely resemble the larger magnolia "cup," though the foliage of the two sorts has parted company, and that of the great magnolia stays evergreen. W.P.

produces its handsome golden yellow flowers on racemes of from nine inches to a foot in length, and will remain in good shape for two months in a cool greenhouse. They should be potted in good soil, composed of 3-5 loam and 2-5 good leaf soil with a liberal dash of sand added thereto, any time in the latter end of July or the beginning of August, thereafter treating them after the manner of Dutch bulbs, that is, plunging them in ashes or sand in a frame where a shutter can be put over them to keep them cool and dark; in this position they can remain until they show signs of growth when the shutters can be removed, but careful watering is necessary until they are well in leafage.

In taking them into the greenhouse a cool temperature suits them best, say from 40° to 45° at night; in order to get a compact sturdy growth with a correspondingly good head of flower spikes, they must be kept near the glass and cool treatment strictly adhered to. A 6-inch pot makes a nice decorative size with from eight to ten bulbs in each pot according to the size of the bulb. *L. tricolor*, *L. pendula* and others are pretty and cheaper than *L. Nelsonii*, but not to be compared with the latter for attractiveness.

They increase tolerably fast by bulblets and should be dried off by degrees as

freesias and other similar bulbs are, keeping them, however, in the old soil until the repotting for the following season begins. Potted at the time mentioned above *Nelsonii* would be in flower about Christmas. When well established liquid manure given occasionally will do them much good. K. F.

NEW AMARYLLISES. [See page 259.]

The accompanying engraving is from a photograph of a group of seedling amaryllises exhibited at the May exhibition of the Massachusetts Horticultural Society at Boston. They were grown by Mr. Kenneth Finlayson, gardener to Dr. C. G. Weld, who was awarded a silver medal by the society. Nothing has been shown at the exhibitions of the Mass. Hort. Society for a long time that excited so much admiration and favorable comment as these splendid seedlings. Many of the flower stalks bore five and six blooms each, of great size and substance and unequalled in form and coloring. The seed was sown just two years and eight months prior to the exhibition.

CALCEOLARIAS. [See page 261.]

At the May exhibition of the Massachusetts Horticultural Society at Boston, the calceolarias were unquestionably the finest ever shown there, and this is probably equivalent to saying that such perfect specimens were never before seen in America. The accompanying engraving from a photograph of one of the plants shown will give an idea of the perfection to which the calceolaria may be grown. The flowers of the plant illustrated were pure deep yellow.

SHOW PELARGONIUMS.

These are now in fine flower, and what a show they do make! It is a wonder they are not more largely grown, for I do not think there is anything in their season that has more attraction than a house of these beautiful plants. They are of easy culture, only requiring a cool greenhouse such as is used for cinerarias or calceolarias. Cuttings can be put in about the end of August in a box of sand. I find a shady frame the best to root them in, keeping it quite close till they are rooted. They are then put in small pots. When they start to grow the head is nipped out to make them break, and this is repeated till the end of January, keeping them potted on as needed. A 5-inch pot will be large enough for the final shift. They are kept well up to the glass to cause a short, stocky growth; a temperature of 45° is about right for them. When they begin to show flower, if they are in any way root-bound, a little weak manure water will help them greatly. All fallen petals should be picked off the foliage, as if left on will cause them to rot. The foliage should be kept dry, as if wet too often it will rust. When they are past flowering they can be plunged out in some half shady place, but not under trees, as this will cause them to draw and give poor cuttings.

If there is ample greenhouse accommodation the old plants can be grown on from year to year, but if only a few are wanted new plants from cuttings are the best. When the cuttings are taken off (or better still, when they are rooted) the old plants can be cut back to about two eyes. Water should be given sparingly till they start into growth, at which time they should be shaken out of their pots and all the soil removed from the roots, cutting off the longest roots and potting into as small pots as can be used,



PELARGONIUM.

and shifting on as needed, giving them the same treatment as the cuttings in the way of pinching.

Among other things in flower in the greenhouse a lot of hydrangeas are very showy. The cuttings were put in about the 15th of September from some old plants that were planted out in the garden. They were put in small pots and in February were potted into 4-inch pots. Now these little plants, about five inches high, are carrying heads ten inches across, and we find them very useful for greenhouse decoration to mix among the gloxinias and begonias.

The early potted up gloxinias are now showing flower. So are the tuberous begonias. Some pans of the old-fashioned musk are quite nice; how little we see of it in greenhouses! We regard it as indispensable, the fragrant leaves and bright yellow flowers scenting up the whole house. A batch of lilies will soon be in flower; these were wintered over in a frame and will be used for garden decoration, plunging them out where needed. Among the varieties are *Humboldtii*, *longiflorum* in variety, *Batemanniae*, *auratum*, *speciosum* in variety, *Washingtonianum*, *Wallacei* and others. These were brought into the greenhouse in March and will prolong the season of the lilies greatly. This is also a good way to grow some of the more tender ones that will not stand our cold winters.

Mahwah, N. J. DAVID FRASER.

THE DISPLAY of plants and flowers at the Tennessee Centennial Exposition, which opened May 1, is promised to be unusually elaborate.

Miscellaneous.

HORTICULTURE.

[Extracts from a paper read by Mr. J. N. May, Summit, N. J., before a recent meeting of the Lenox (Mass.) Horticultural Society.]

Horticulture embraces every department that constitutes a gardener's profession, and from what I have seen and known of this magnificent section, with its palatial residences, its vast estates, and the men under whose care the embellishing and great improvements are constantly going on, I feel certain there is not one present here who is not called upon constantly to exercise all the skill possible in conducting and carrying out the details of the same.

There is no section in this glorious country where nature has been more lavish in laying the foundation for grand effects in landscape. Mountains and glens, valleys and streams are so beautifully blended with the magnificent specimens of trees and shrubs, that the landscape artist can with reasonable care and knowledge in improving this, produce the grandest effects. In many sections the most beautiful features of the landscape have been utterly destroyed for the want of careful judgment in cutting away the beautiful trees, etc., which nature had already planted there. This has often been done from mere carelessness; in other cases from want of knowledge of what constitutes the true features of a beautiful landscape. With many the idea seems to have been that all natural

undulations must be levelled down and then have a broad lawn extending as far as practicable, with a few poor little infant trees dotted around at regular distances, with some planted in straight rows, and the whole clipped or trimmed into formal shape, looking more like a lot of toys than anything which nature intended to grow into ornaments; or else the whole was left to grow wild, and presenting about as uncanny an appearance as a college foot ball team when preparing for a match; add to this a few formal flower beds placed in the most conspicuous places where they can be seen from the public roads. I have been shown several such places with evidently a good deal of pride by those who thought they had done a grand piece of picturesque landscaping, and as often have I sighed with considerable relief when I have gotten away from it and beheld possibly in close proximity a grand piece of natural scenery. With reasonable knowledge these same places could have been made perfect pictures of beauty. Such instances I am pleased to think are vastly in the minority, and will be still less frequent in the future, for as we become better educated in nature's school, we shall certainly understand the art of imitating her much more closely.

In planting trees the future must have a large share of consideration, as it is then the grand effect will be best seen. No better illustration of this can be found than in some of the older places in Europe. One in particular I will mention as it was the scene of many pleasant days of my earliest experience in gardening, namely Dropmore, so long and so ably presided over by that grand instructor and friend to every student (Philip Frost) under whose fostering care were gathered together probably the grandest private collection of evergreen trees in Europe. These were all planted with due consideration for their future development; not massed together, but judiciously blended with the natural trees and shrubbery, where you could walk for hours, and at every turn find some rare gem to admire, or a grand vista opening up some specially fine distant view, or a grand piece of nature's planting, or again find a magnificent specimen of *Araucaria imbricata* with its symmetrical head towering heavenwards; at another a magnificent specimen of *Cedrus Deodora* with its arms spreading out in the most irregular of forms. These and many other things too numerous to mention, were what I found on revisiting the same in the summer of 1895, but not the artist who laid the foundation of this glorious picture; his remains rest beneath the green he so dearly loved, but in memory he will ever live with those who knew his true worth.

From there to the world-famed Burnham Beeches is but a very short distance, and the transition from the art of man to that of the Creator is so blended that one scarcely realizes it till he begins to estimate the number of wonderful beech trees surrounding him on all sides, many of them with histories of six or seven hundred years, and beneath them a genuine carpet of green where thousands yearly enjoy their beautiful shade and breathe the pure refreshing air of their companionship. But I am digressing from my subject.

What then constitutes the best features of a beautiful landscape is too broad a subject to attempt in detail here, but there are a few points which it might be appropriate to mention.

First, where natural trees are already growing on the ground, great care should

be exercised in selecting the position for the dwelling house, next for stable and other necessary buildings, then the carriage drives and all other roads should be so located that they have the easiest grades and fewest short turns possible; at the same time due consideration should be given to preserving all the best trees possible. These should be left in natural clumps or belts where such are desirable. In other cases careful thinning out of poor specimens, preserving only the finest, but always bearing in mind that it is so much easier to leave a good tree growing than to replace it with another after its removal. Broad stretches of lawn judiciously laid out are absolutely necessary, but where they exist the natural undulations of the land should be as little interfered with as possible in making the lawns. The margins of the clumps of natural timber can often be utilized to introduce some grand features of flowering shrubs, of which there is an endless variety. Some places would be most suitable to strictly deciduous, while others, where better sheltered, the native evergreen shrubs such as rhododendrons, kalmias, etc., can be used with grand effect in these same clumps which bloom almost exclusively in spring. The judicious planting of many summer and fall flowering plants, such as *Lilium lancifolium* and its sub-varieties, tritomas and many other hardy things of like nature, for all of which the soil best suitable to the rhododendron is also best suitable for them, and what a beautiful effect the dark lustrous leaves will give the bright colored flowers as they appear in the distance; coming nearer to the residence, what charming combinations can be produced by a judicious blending of the coniferous family and the bright glowing colors of many of the maples, beeches, oaks and other trees, not forgetting a liberal amount of yellow foliage.

Water in most forms is a great desideratum in any landscape. The gentle rippling brook with its low music, whose banks should harmonize with its modest charms; or the rushing turbulent mountain torrent with its ever vibrating harmony of haste to join the mighty deep, needs a bold, fearless treatment of its banks; while the modest lake or mighty river each should be treated to suit their surroundings.

These are only a very few of the points necessary to consider, but I fear I shall tire you on this point, so will pass on to the garden proper.

This should be selected with due regard to a suitable position and where it is not in full view, if possible, from the dwelling house; it should be of adequate size for the purpose designed, where all that is to be grown, whether it be fruit, flowers or garden vegetables, should be grown to their highest perfection. Here the gardener will have to use his best skill every day in the year, for the simple reason that every employer to-day expects to have his own product from his garden or farm, fully equal to the best which can be found on his neighbors', and generally expects to have it better. Here the thoroughly practical experienced gardener will select only the best and most approved varieties of fruits of the various kinds; the same in vegetables, and of flowers. I allude here more particularly to such as are produced in the open ground.

Before closing these remarks I would like to put in a little plea for the hardy flowers and natural gardens. In nearly every place of any considerable size there

are out of the way places where a wild garden can be arranged; the word wild may not be poetical, but it is pertinent; I mean by it, where many hardy things in plants, flowers and trees can be so blended in planting that they will form a charming feature of natural beauty at all seasons of the year, and when well done I have never seen one such but would call forth the greatest admiration from all lovers of nature. With dells, small streams, rocks of various sizes, low marshy spots, mounds, etc., a part or all of which are often found on many estates, here the art of man can beautify nature by making a truly lovely wild garden, and when once established the transition from the more modern part of the grounds to this will be all the more striking and attractive.

These are only a few points necessary in horticulture, but in no place ever laid out can the complete ideal be found; no place so perfect but it can be improved. In every place the various pictures should not only be gems in themselves, but should form one grand panorama designed and executed for amusement, recreation, education and advancement of horticulture.

With all the advantages we have in this glorious country, with its wealth, diversity of climate, the immense variety of trees, shrubs and plants which flourish in such perfection, exceeding almost every other country in the world, why should we not have the most beautiful horticultural pictures in the world! The artist who executes these will be honored as among the greatest benefactors of mankind, and his work will be a standing monument to his worth; and in the words of the immortal Shakespeare:

A summer's day will seem an hour but short,
Being wasted in such time-beguiling sport;
Surely he hath not lived in vain
Who lived and labored for others' gain.

POPLAR MYTHS.

A recent very interesting note in GARDENING on the folk-lore of the aspen or quaking ash recalls that other members of the poplar family have also a legendary history of great antiquity.

The European asp, aspen, or quaking ash as it is called in Scotland, is botanically *Populus tremula*, while our American aspen, which has a rounder and more regularly toothed leaf than the European species, is *P. tremuloides*, Mx. The name poplar (*Populus*) is said to be derived from *Arbor populi* (tree of the people) so common was it in ancient Rome. Virgil in his poems mentions poplar many times.

It may be noted in passing that our cotton-wood is indeed the tree of the people, being the only tree in this country which has multiplied spontaneously in spite of civilization. Within the past fifty years the cotton-wood (*P. monilifera* Ait.) and its kindred poplars and willows have converted the bare prairies of the great Mississippi basin into grove studded plantations. In the arid regions of the west a struggling, straggling fringe of cotton-woods marks the water courses where no other tree has been able to subsist.

Mythology assigns to the poplar an Italian origin. As the story ran "The Heliades, sisters of Phæton, by name Phætusa, Lampetea and Ægele, after that rash youth had been slain by Jupiter for his reckless driving of the steeds of the sun, and cast into the river Po, spent their days by the river side shedding tears, wringing their white hands and bewailing their loss, until the gods in

pity transformed them into poplar trees and their tears into amber, which substance was supposed by the ancients to flow from poplar trees like tear drops." (see Gueber's Myths p. 87).

The silver leaf poplar (*P. alba*), called also Abele, which some authors derive from Arbela, a city near Nineveh, where this tree abounded, while others trace it to Aabel, old French, or *Albellus* mediæval latin, from the color, was sacred to Hercules. He was fabled to have brought it with him from Hades when he went to fetch Cerberus, the triple aggregation of canine ugliness that did guard duty on the premises of Pluto. Hercules having first wreathed round his head a garland of white poplar leaves from a tree growing on the bank of the Acheron, then passed that river, captured Cerberus and dragged him captive back to the earth. The smoke of the infernal regions blackened the exposed surface of the leaves of the wreath while the other side remained white, hence the marked contrast in color between the upper and under surfaces of the silver leaf. The wood of the silver leaf poplar is used for many purposes in Southern Europe. The wood of the aspen was at one time in England dedicated by statute solely to making arrows.

The folklore relating to these trees is interesting in so far as it indicates the part which the poplars filled in the daily life of the people of those remote ages.

J. HIGGINS.

WE HAVE HAD a fresh lot of Vols. 1 and 2 of GARDENING bound and can now supply these, bound in half leather, at \$2.25 each post paid. Vol. 1 is complete but in Vol. 2 there are two numbers of the paper missing, the edition of these having become exhausted. We still have a supply of Vols. 3 and 4, bound in style uniform with the others, price \$3.25 each. We will send the four volumes by express not prepaid, for \$10.00. These four volumes are a comprehensive horticultural library and invaluable for reference, each volume having a copious index.

THE Northern Indiana Horticultural Society will give its second annual flower show in Ft. Wayne November 3 to 5 next. John L. Hanna, 402 Broadway, Ft. Wayne, Ind., is secretary.

Orchids.

FORMS OF *CYPRIPEDIUM GAUDATUM*.

The long petalled flowers of the caudatum forms of the cypripedium are so remarkable that they are always of the greatest interest. In some forms the petals are from twenty-five to thirty-five inches long.

The accompanying engraving is from a photograph of a group of plants in the W. S. Kimball conservatories, Rochester, N. Y. Regarding the plants seen in the picture, Mr. George Savage, the gardener, writes:

"The one to the left is an extra fine form of *C. caudatum* Wallisii, lasting very much longer in flower than any other of the type. On the floor to the left is the new *C. Kimballianum*; next *C. Schomburgkianum*, also *C. Stonei*.

STANHOPEAS.

I have been given an orchid, *Stanhopea grandis*. I am not familiar with it. Will you please give the treatment required,



FORMS OF *CYPRIPEDIUM CAUDATUM*, IN THE KIMBALL CONSERVATORIES, ROCHESTER, N. Y.

time for rest and time for flowering. It is an old plant and the 5-inch basket is much crowded with old dead bulbs. When would be the best time to divide and re-basket it?

WM. P. LYON.

Ontario.

Stanhopeas send down from the base of the plant, a flowerstalk with a large, very fragrant and strikingly gorgeous inflor-

essence; the flowers of curious form. These plants should be grown in shallow and therefore rather broad baskets, and the material used for them to root in is best of fresh sphagnum moss on a light layer of clean fibrous peat, all quite open. As the flower-stalks usually push down through the compost and bottom of the basket, everything which would impede their progress should be avoided, hence, having removed the bottoms of the bas-

kets, I lay across a few pieces of round smooth canes, such as are used by florists for tying up plants, just enough to retain in place plant and compost.

They delight in a warm greenhouse or stove. Single old bulbs with a live eye will throw out a new growth if put in moss and sand and laid in moist heat. They generally flower in autumn and need a long dry rest after growth is finished.

WM. H. C.

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THE Santa Clara Floral Society will hold an exhibition of sweet peas in San Jose, Cal., in July, during the visit of the Christian Endeavor Society.

"WHAT ARE the essential qualifications of the ideal park superintendent, and what is their relative importance?" This will be the subject of a paper by Mr. O. C. Simonds at the next meeting of the Horticultural Society of Chicago.

IT IS REPORTED that a Danish scientist has discovered that plants are susceptible to the influence of ether or chloroform, but that in their case the effect is to awaken them instead of putting them to sleep. It is also stated that the drugs named induce a rapid growth and at any season. But we had best await the results of experiments by American scientists before trying the effect of these powerful drugs on any of our favorite plants.

SWEET PEAS.—Bulletin No. 127 of the Cornell University Experiment Station, Ithaca, N. Y., is devoted to "A second account of sweet peas" by A. P. Wyman and M. G. Kains. It contains much matter of interest about the newer sorts of the sweet pea and includes a tabulated record of the time of blooming, height, length of stem, quantity of bloom, production of seed, size and substance, of a large number of varieties. Our understanding is that these bulletins are sent free on request to any one interested.

WE HAVE RECEIVED the first number of the *Canadian Horticultural Magazine*, which is to be issued monthly by the Montreal Horticultural Society. The first issue (April) contains a number of useful original articles treating mainly on fruit growing.

"THE DAHLIA" is the title of a new English book, a copy of which has been received from The Macmillan Co., New York (Price 75 cents). It contains 81 pages and treats upon the history of the dahlia, its improvement, the various types, botany, propagation, cultivation, insect enemies, lifting and storing, exhibiting the blooms, etc., and gives a very full list of varieties, arranged in classes, with brief description of each.

S. B. D., Jackson, Mich., writes that the tops of some weeping cut-leaved birches died back in his vicinity, and that he sawed them just below where they were dead and found in the wood a number of small white worms from an inch to an inch and a quarter long and somewhat larger round than a match, and that these trees have since died. The worms were the effect, not the cause, of decay. It is well known that the borers and other pests attack trees as soon as they become weak from other causes, and probably hasten decay.

A SUDDEN FREEZE on April 20 did serious damage to early flowering shrubs and herbaceous plants around Boston and the effects can now be seen. Wistarias, magnolias, *Deutzia parviflora*, half hardy hydrangeas, *Astilbe Japonica* and all lilies that were above the ground were entirely ruined for this year. Forsythias escaped with partial injury. *Spiraea prunifolia*, *Andromeda floribunda*, *Prunus pendula* and *Daphne cneorum* are all nicely in bloom and show no evidence of having been harmed. With the thermometer below freezing point for two nights and one day, with a strong dry wind, more damage might have been expected. Among the tough things that bid defiance to the freezing winds were *Dirca palustris*, *Cornus Mas*, *Lindera Benzoin* and the trailing *Rhus aromatica*.

IN THE SPRING of 1896 two Japanese weeping cherries were planted in good sized holes dug in a clay loam. One was planted in a well-drained situation, and is in good condition this spring. The other was in a rather low spot and the natural soil in which the hole was dug belonged to a "sandy streak" always quite wet in rainy weather. This tree started well and during the summer made good growth. The fall was very wet, and water stood in the hole. Along in September the leaves suddenly drooped, and the owner noticing it, dug a drain from the hole, but could only make a shallow one owing to the situation. This spring the tree showed signs of weakness and upon examination of the roots, they proved to have rotted back to the center. How well drained is the soil in which are those you planted this spring?

AMUSING CLAIM FOR PLANTS.

The English *Gardeners' Magazine* prints the following amusing claims for plants:

The Cardiff Burial Board recently purchased some land for the purpose of enlarging the cemetery, and three of the tenants claimed compensation. One of the claims was for £500, and the specified items included the following: Two hundred Michaelmas daisies, eleven polyanthus, five roots anemones, three Jacob's ladders, six aule major, one evening primrose, four feet father before son, two lilacs, eleven pink carnations, one sunflower, four hundred and twenty daisies, one

pruney, two musks, two Noah's arks, a further two Michaelmas daisies, and two gladioli. Our knowledge of Welsh plant names is not sufficient to enable us to identify "aule major" or "father before son," and none of the dictionaries of plant names that have a place on our bookshelves afford us any assistance. "Jacob's ladder" is, of course, *Polemonium coeruleum*, and "Noah's ark" is *Cypripedium pubescens*.

The Fruit Garden.

CARING FOR NEWLY PLANTED FRUIT TREES.

It has been my fate to witness the loss of so many freshly planted fruit trees that a few hints to those who have planted some this spring may be of use. Presuming that what have been planted have started into growth, care must be taken that what leaves are made are preserved. Many trees push out a few leaves but make no fresh growth. This indicates that but few roots are active. I have seen gardeners prune in such trees, thinking that by lessening the top, fresh and better growth would ensue, but it never does. Such trees usually die when so pruned. It is a great mistake to prune away the foliage which a weak tree has made. The preservation of the leaves, few and small though they be, will ensure the life of the tree, and the following season a good growth may be looked for. To preserve it place a mulch of some kind about the tree, to keep the soil cool and moist; and see that no insect or fungous foe attack the leaves. Mulching is one of the greatest helps a newly planted tree can receive.

Many trees are lost by permitting them to flower and fruit too early. Trees often start vigorously the first season, and will flower and set fruit. It is wrong to permit them to have their way the first season. If new shoots are being made, a fruit or two perhaps, to verify the kind, is allowable. But where leaves only are made it is entirely wrong to allow fruit to form. Flowers should be cut off before expanding. And even on trees of a year's standing there will be but little growth made should fruiting be permitted.

What a drain fruiting is on the growing of a tree I have often seen illustrated in the case of two trees of the silver maple which grow near by. One of these is a seed bearer, the other is not. At this season of the year the non-seed bearer is full of well formed leaves, and an inch or so of new growth appears at the end of each shoot. The seed bearer has not a leaf expanded. It is hanging full of seeds. In a week or two the seeds will drop, and in a few days or a week thereafter out will come the leaves. If it were better realized what a tax fruiting is to a tree there would be more care exercised that freshly planted ones should not be permitted to do it.

A great many well rooted trees die from not being firmly planted. They leaf out perhaps, but as soon as this occurs, winds toss them about, and the swaying loosens them still more. A tree of this description cannot make roots. The motion caused by the wind extends to the roots, snapping off newly made fibers, and, as far as growth is concerned, no progress is made. If ramming of the soil will not stiffen the tree, which is sometimes the case with large headed ones, staking should be done to hold the tree for the first season.

Unless the soil is already rich, the mulching previously spoken of should be of rotted manure. Treated in this way the first season, trees will be preserved, and

when the second year comes around a nice growth may confidently be expected.
Philadelphia. JOSEPH MEEHAN.

SMALL FRUITS.

All berry bushes should be protected from summer heat and drouth. This may be done in two ways. First: by frequent cultivation and hoeing, thus forming an earth mulch, which prevents the rapid escape of moisture from the soil. Second: by covering the ground around the hill with coarse manure, straw and other material, which prevents evaporation and retains the moisture about the roots.

One of the best and cheapest mulches for the farmer, is green clover, cut in blossom and applied same as manure. It is easily applied, retains moisture, enriches the soil, keeps the berries clean and contains no germ of noxious weeds. A good mulch well applied is one of the great necessities in successful fruit growing.

When new canes of the blackberry and black raspberry are eighteen inches high, nip the top off about two inches; this will cause several new laterals to grow which should be trimmed severely in the spring. The pinching back of new growth is important. It largely increases the bearing surface, keeps the bush low, strong, well formed and less liable to injury from severe storms.

Frequent cultivation makes plant food more available and is especially necessary after hard rains. The ground must be kept mellow throughout the growing season.

Allow no fruit to grow on strawberry plants the first season, pick off all buds and blossoms. The matted row with clean paths between is best for most varieties and most growers. Avoid having plants too thick in the row and you will have larger and better berries. With strong growing varieties remove first runners. The ideal method would be to allow first runners to make plants until matted row is formed, giving each plant five or six inches square space in which to grow, and removing all runners thereafter. This is seldom accomplished in practical berry growing.

Clean cultivation is the great safeguard against fungous diseases and insect pests. These enemies are cowardly, they always attack the weak and unprotected plants first. Look for them closely and apply remedies for them at once.

For the currant worm, no remedy is safer or more easily applied than white hellebore. Dissolve an ounce of the powder in two gallons of water and apply with fine sprinkler or brush broom. The worm first appears on the lower branches about the time fruit is formed.

Thorough work in June insures safety during the trying months of July and August.

M. A. THAYER.

ROOT PRUNING FRUIT TREES.

At this season of the year the root pruning of fruit trees that do not flower should be considered. Small fruit trees should not be permitted to fruit, but when they have long passed the time when fruit should be given and no flowers are produced, root pruning may be resorted to, to bring about the desired result.

A space should be dug out a few feet from the trunk of the tree and some of the larger roots severed, the soil to be thrown back afterwards of course. This puts an end for awhile to too rapid growth, and instead, flower buds are formed for the next season. This plan

[CONTINUED PAGE 268.]

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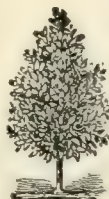
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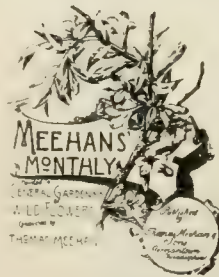


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rarely fails. The work should be performed soon, to reap results by next year.

This root-pruning, by the way, can be practiced when it is desired to transplant some tree in the near future. Perhaps a dozen small roots will take the place of the one severed, and this, together with the fact that all the roots are closer to the body of the tree than before, make the chances of a safe removal much better than before.

A tree treated in this way now would be in good condition to transplant in the coming fall or spring. But instead of cutting but a few of the larger ones, as recommended for producing fruit, a circle should be dug around the tree and all large roots severed.

Returning to the subject of pruning for fruit, the old German farmers hereabouts ring their trees to accomplish the object. At about the longest day, they take a spreading toothed saw and saw a circle around the trunk, through the living bark. I presume connection is soon made between the severed portions, but the check of the flow of sap for the time seems to result in producing a fruiting tendency.

Philadelphia.

JOSEPH MEEHAN.

SWEET CHESTNUTS.

Since the introduction of the Japanese chestnut to this country there has been much interest evinced in the growing of this and other kinds which bear large nuts, for commercial purposes. Several parties have set out orchards of them, believing that in the near future it will be a profitable investment for them.

There are none of the foreign sorts having the sweet flavor of our native species. Those who have planted the orchards referred to know this, but they rely on the well known disposition of the public to take size rather than quality. As the foreign product arrives here in late autumn, ripening in Europe at about the same time that ours does, there would be but a few weeks advantage on the side of our own growers, and the price of the European crop is very low.

In regard to the size of the nuts of the foreign kinds, the Japanese is much larger than any of the imported Spanish. No doubt the nuts of the Japanese sent here for sowing purposes are selected for size, as some of them are two inches in diameter. But nuts from trees grown here are much larger than the Spanish, and there is no doubt of its being the best of any kind in this respect. Our nurserymen have already been alert in the perpetuating, by grafting, of some of the seedlings which have produced extra large nuts, as well as some showing a disposition to ripen early.

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Referring to the hardness of the foreign sorts, I find the Japanese superior to the

[CONTINUED PAGE 270.]

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Spanish, contrary to what I have read of the experience of some others. The young seedlings from imported nuts of the Spanish nearly always partly winter kill the first winter or two, the Japanese never do. Nuts of the Spanish from home grown trees give hardy seedlings, and the varieties mentioned, Numbo, Paragon and Ridgley seem perfectly hardy hereabouts. These kinds are preferable to common seedlings for that reason, and for their better sized nuts

Of all kinds tried the Japanese is the earliest bearer. I have seen three year-old seedlings, still in seed bed, with burrs on, and it is not uncommon to see little bushes of five to six feet endeavoring to fruit. It is at best a comparatively small sized tree, fitting it for placing in gardens of moderate size. In habit of growth it is pyramidal, quite unlike the round-headed growth of the Spanish and, indeed, of our native sort when it is in an open situation.

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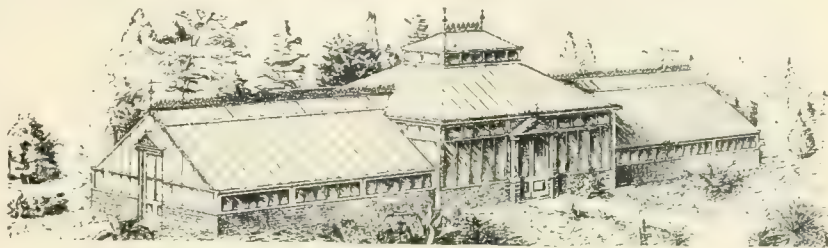
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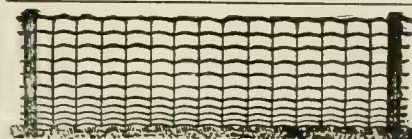
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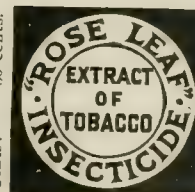
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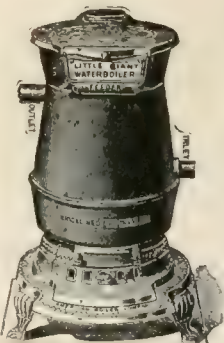
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The Flower Garden.

EULALIA GRACILLIMA UNIVITTATA.

In GARDENING, September 1, 1896, there were illustrated and described two forms of the eulalia. We now illustrate *E. gracillima univittata*, a more recently introduced species, and one that may be grown in more exposed situations than the others, as its growth is more tough and wiry, and it stands up well against strong winds. In habit it differs from the other members of the family in being more upright, and the leaves form more of an arch in their outward bending. The leaves are light green in color with a faint narrow light-colored stripe running through the center. Planted as an individual it is a very graceful appearing plant, perfectly hardy.

PLANTS IN BLOOM MAY 15.

Since my last notes of May 1, quite a lot of bulbous and herbaceous plants have come in flower. In the tulip line we have had some showy and beautiful ones. Among the single species we have had *T. Batalini*, *T. linifolia*, *T. saxatilis*, *T. Clusiana*, *T. Eichleri*, *T. Greigi*, and

others. Among the showy May flowering single tulips we have had *T. Billiciana*, *T. elegans alba*, *T. Gesneriana spathulata*, *T. G. alba-oculata*, *T. macrospella*, *T. G. alba marginata*, Picotee, Striped Beauty, Fairy Queen, and many others. All of these are choice and beautiful tulips, some of them quite rare, but if choice tulips are wanted grow a few of them. Some are of very dwarf growth and the coloring in the flowers all that could be desired. The breeder tulips have flowered well; the colors are mostly dark and some of them are more odd than beautiful.

Among other bulbous plants in flower *Camassia Cusickii* is making a nice showing. This grows about three feet high and has large spikes of pale blue flowers; it is considered to be the best one of the group. *C. Fraseri* and *C. esculenta* were both showing flower but the slugs got at them and every flower spike is gone. They are all hardy with us and well worth a place in the herbaceous border. *Scilla campanulata* and its varieties are now nicely in flower. These wood hyacinths are very accommodating little plants, growing freely most anywhere. They are useful to naturalize among shrubs, and coming in flower when most of the bulbous plants are past, they help

to keep the garden gay a longer period, as there is always a scarcity of flowers in the garden between the early bulbous stock and summer blooming plants. *Ornithogalum exscapum* is a dwarf growing bulbous plant about two inches high. It has umbels of large white flowers; a good spring edging plant for beds or borders. *O. nutans* is a larger growing kind; the flowers are also white and they are useful for cutting; it will grow most anywhere and both are quite hardy. *Erythronium grandiflorum* has done very well this spring; our plants are carrying four flowers to a stalk. This is the choicest one of the whole group, and well worth growing. They like a half shady place to grow in. Some of the newer varieties have not flowered this spring, but as they were planted only last fall it may take them a year to get established. The hoop-petticoat narcissi are now in fine flower; they stood the winter well, although they are not quite hardy with us, but they are well worth planting every year as they are pretty little flowers. *Brodiaea Howelli lilacina* is the first bulb to flower in the bulb frame, but it will be a week or ten days before any show of them is had. They wintered over nicely in the frame and the same can be said of the calochortus, freesias (we are

trying to flower a lot of them now, but I do not yet know whether it will be a success) and gladiolus, but will speak of them later as they come along.

Among herbaceous plants in bloom the single pæonies are quite conspicuous. They begin to flower about two to three weeks before the herbaceous double ones. There is a beauty about these flowers which is not seen in the double ones, and in some of the varieties the foliage is quite handsome. The only thing against them is they last such a short time in flower.

a lot of this from seed last summer and the little plants have flowered nicely.

The *Doronicum austriacum* (dog bane) produces in early spring lovely yellow marguerite-like flowers on long stems, much valued for cutting. It is a choice plant for the front of the border and is quite hardy. *Anemone sylvestris* (snow-drop anemone) is a beautiful little plant, very free flowering, and has snow white cup-shaped flowers. *Trollius asiaticus* (Globe flower) is one of the showiest little plants we have in flower; its yellow

varieties are showing well. The German irises are now beginning to make a show. The first one to flower was Prince of Wales. This is a lovely variety with large pure white flowers. Some others are in flower but it will be a week before there is much of a show.

Linum perenne (perennial flax) is a free flowering plant and has blue flowers; the growth of the plant is graceful and it is in every way a good border plant. The hybrids of *Verbascum phoeniceum* are beautiful little mulleins. They grow only a foot to eighteen inches high, and the little spikes of flowers, in great variety of color, are real pretty. Unlike the other mulleins they have to be planted quite close to have the best effect. All the mulleins are good and well worth a place in the garden. We are to flower two new ones this summer: *V. Weidemannianum* and *ovatifolium*, the blue mullein. *Dicentra spectabilis* is now in good flower. This is an old fashioned plant, but still one of the best for early spring. *Lychnis viscaria fl. pl.* (Ragged Robin) is a choice free flowering plant and lasts a long time in flower. It is very showy and one of the best plants we have for cutting, in fact too much of it cannot be grown. It has long dense-flowered spikes of rose red flowers, very double and highly fragrant; a good plant for amateurs to grow and one that is sure to please.

Papaver atlanticum is a showy single poppy in much the same style of growth as *nudicaule*. In a few days we will have a good show of poppies as our plants are in fine shape and showing well. *P. alpinum* and its variety *album*, likewise *nudicaule* are still in good flower. *Lunaria annua* has been in flower for some time and is a good plant to grow in the shade or open but it is not what you would call handsome. A clump of Alpine strawberries in the border is very showy. Unlike the other strawberries it sends its flowers well above the foliage; these are worth a place in the garden for their flowers alone; the small fruit is also very nice. *Viola cornuta*, blue and white, are now in full flower; they are extremely showy and very free flowering, carrying their flowers well above the foliage on slender stems, which makes them very useful for cutting.

Daphne Mezereon is a small dwarf shrub generally grown in the herbaceous border. It flowers early in spring, color red, and the plants when in flower are quite showy. *Leophyllum buxifolium* (sand myrtle) is another small shrub, not unlike the daphne. The flowers come in clusters and are white and pink. The pansies, forget-me-nots and daisies are now in all their glory, and as spring bedding plants, though common, are much thought of. They are so free flowering that we could not get along without them.

Among shrubs in bloom the lilacs in great variety are quite conspicuous. No wonder these shrubs are so popular, for some of the finer varieties are truly beautiful. *Pyrus japonica* (Japan quince) has been very showy of late but is now about past. *Exochorda grandiflora* is now in full flower; it is of a free flowering nature and the bushes are a mass of white. This is a good shrub to cut from; the flowers are white and quite large. *Berberis vulgaris* is not a showy shrub when in flower, but it is so extremely fragrant that in the evenings it scents up the whole garden. *Prunus sinensis alba plena* and the variety *rosea* have been a mass of flowers lately but are now about past. These are the dwarf almonds and are well worth a place in the garden, for when in



THE EVERLASTING PEA IN THE WILD GARDEN

The tree or Moutan pæonies are also in flower. These are very slow growing plants but should be in every garden; their large double flowers are fine for cutting. They are not so hardy as the herbaceous ones, but with us they winter well without protection. *Primula Sieboldii* is one of the nicest primroses we have in the garden. This variety is herbaceous, losing its leaves in autumn and winter when it goes to rest, coming up early in spring again, and begins to bloom about the end of April. It lasts a long time in flower and they possess a great diversity of color; the petals of some are beautifully fringed. It is of easy culture and should find a place in all herbaceous gardens. *Iberis sempervirens* has not done so well this spring, the young wood being nearly all winter killed, still there are a few flowers and how nice they are for cutting. We raised

globular flowers are very conspicuous and when grown in a clump it is seen at its best. *Iberis Pruiti* is a very dwarf plant with white flowers, a good edging plant, but not so showy as *I. sempervirens*. *Cypripedium pubescens* is now in good bloom. Although a native and found in some parts of the woods here, a few plants in the garden don't go amiss. Its flowers are yellow spotted brown.

Armeria maritima (cushion pink) is a little tufted plant which has small pinkish flowers on long stems, a good plant for the edge of the border. *Aquilegia chrysantha alba* is a lovely white columbine. The flowers are large and pure white which makes it a good cut flower. *A.erulea* is also in flower; a lot of it raised from seed last summer has all come true so far, which is not often the case with this variety; in a few days we will have a fine show of them as all the



WILD GARDENING AT EGANDALE.

flower they are all that could be desired.
Mahwah, N. J. DAVID FRASER.

WILD GARDENING.

Egandale is fortunate in being partly bounded by deep ravines whose banks are thickly covered with native trees. Where the main lawn exists the clearing away of the original forest trees, on the table-land right up to the edge of the ravine banks, has allowed the sun to reach those trees and shrubs growing on the banks, and in time they became thickly clothed with leaves. This leafage reaches from the table-land level up to the tree tops, thirty or more feet high, forming, as it were, a leafy hedge trending in all the sinuosities of the bank lines. The sheared lawn is brought to within three or more feet of the edge; the intervening space is devoted to whatever native plants existed in situ and is further planted with those most likely to exist without care. Whenever some species that is pleasing in effect shows itself I supplement it with others taken from the fields.

A small space of this "leafy hedge" is here illustrated. I desire to call attention to one feature that caused this section to be photographed. It is one of the few cases where a photograph does not do justice to the original. The planting was accidental, but the effect, in the light of wild gardening, was grand. Before the leafage had become so dense down towards the base, I had set out one strong plant of the white form of the everlasting pea (*Lathyrus sylvestris* var. *platyphyllus*) with the idea of its drooping down over the bank which exists within a foot or so back of the foliage. This was several years ago. The situation is naturally dry and receives no artificial watering, and for several years the plant made no headway, and in fact became almost forgotten. Last summer was more rainy than usual and the plant seemed to take on a new lease of life and

climbed up among the branches of some young oaks, blooming here and there even up to a height of over six feet. Visitors were very much puzzled to know "how those sweet pea blossoms came there." The plant has given me a hint of what it can do under favorable circumstances, and it shall receive hereafter extra care in order that it may reproduce its charming picture.

In another picture here illustrated is shown a rustic bridge that crosses a spur of the main ravine. The main ravine, some ninety feet deep, is hidden by the tree tops back of the picture, one spur running in under the bridge, and another to the left of the picture, and not shown. This divides the table-land into "points." At the end of "Cedar Point" (so named from an old gnarled red cedar in the ravine near it) can be seen a rustic bridge running from the table land out into the branches of some native oaks that start from the ravine bank some fifteen feet below. The distance, seen in the picture, from the rustic animal (the "what-is-it") to the bridge at the point is about thirty-five feet, but by opening up in the center and massing native shrubs at the sides, the distance, when both sides of the point can be seen, seems much greater. The bridge crossing the sub-ravine or spur is sunken rather than raised, so as to be invisible until quite near. Neither of these bridges can be seen from the main lawn, and they thus constitute some of the "surprises" that always lend a charm to one's place.

The "spur" immediately under the bridge is some twelve feet deep and rapidly narrows and grows more shallow until it terminates some twenty feet to the right. The bank shown in the right hand corner is planted with self-sown asters, golden rods, geraniums and other native plants, while lower down are groups of native wild roses, some indigenous, and others of similar species placed there. From early spring, when

the trilliums, hepaticas and a host of other early blooming plants open up their flowers, through June when the roses are a bloom, and into fall when the golden rods and asters assert themselves, one can gaze on nature's gardening with a satisfaction found in no other style of planting.

W. C. EGAN.

TALL GROWING HARDY FERNS.

Passing by a neighbor's coach house yesterday, it gave me much pleasure to see his collection of hardy ferns, and what good use he had made of what would otherwise have been perhaps an unsightly spot but for the ferns occupying it. The situation was on the northeast side of the building, and between the building and the carriage drive was a space of about five feet, and it was this space which was utilized for the ferns. There was one end of the bed much damper than the other and in it were wisely set such sorts as *onocleas*, *osmundas* and other moisture loving sorts, while the dryer end continued *Dicksonia pilosiuscula*, *Aspidium marginale* and others not so clamorous for a wet place.

What pleased me most was the large growing sorts, and thinking then what little use is made of them, and how many places there are where nothing would do so well, I determined to note some of the best for the benefit of the readers of GARDENING.

Among aspidiums there are five particularly nice ones, and better yet, all are evergreen. They are these, *acrostichoides*, *spinulosum*, *Goldianum*, *cristatum* and *marginale*. These are all bold looking ferns. *Acrostichoides* perhaps is of the most spreading growth, and it is the best evergreen. *Marginale* is a grand fern. The fronds are large and broad and spread handsomely. This likes a rocky place, while *Goldianum*, a species with tall, dark green fronds, likes deep, damp soil. *Cristatum*, too, is of a dark green color,

and a lover of half swampy places. In such situations in Delaware I have seen it thriving wonderfully well. The fronds of *spinulosum* are finely divided so that though a tall grower, it does not display such a mass of green as any of the others. Nevertheless it is a most useful fern, and a lady friend of mine is proud of a large bed of this kind, which certainly adds interest to her charming grounds.

Among aspleniums there are two, *thelypteroides* and *Felix-femina*, of good size. They are tall growing but of less robust growth than the aspidiums. But

For a quiet wet place the sensitive fern, *Onoclea sensibilis*, is not to be despised. Its peculiar pale green fronds, differing from all other ferns, render it desirable in collections. It too, has its fertile and barren fronds separate.

In company with many others I think ferns most interesting plants. Besides their uses in the way described, their study is pleasing, and their identification is soon determined by examining the fruiting portion of their fronds.

Philadelphia.

JOSEPH MEEHAN.



CLEMATIS INTEGRIFOLIA VAR. DURANDI.

because of the contrast they should be added to collections. The under sides of the fruitful fronds of the *thelypteroides* are of a pretty silvery color, and from this comes its common name, "Silvery Spleenwort."

Hardly enough can be said in favor of osmundas. There are three, *regalis*, *cinnamomea* and *Claytoniana*. The former is the king fern. *Cinnamomea* is called cinnamon fern, owing to the color of its fertile fronds, which when ripe look like sticks of cinnamon. This is equal to any flowering plant in early spring when its fertile fronds are displayed. In my own possession is one which at this writing has eighteen of these fertile fronds displayed, and being visible from the street, the plant attracts great attention. All three reach grand proportions. Some time ago, travelling through the woods near Clemonton, New Jersey, I saw evidences of fronds of *cinnamomea* which must have been six feet in height. In their wild state *regalis* occupies partly swampy places, *cinnamomea* the medium situation, while *Claytoniana*, though in damp ground, is usually on a more elevated site.

The Ostrich fern, *Struthiopteris Germanica* is another one bearing its fertile frond apart from the other. It is one of the best of the tall growing, erect kinds. The shape of the frond has much the appearance of an ostrich's plume. It is just the fern to plant where a clump is wanted, as it quickly spreads by putting out underground stolons, so to speak. A good strong plant set one year will show perhaps three the next and so it goes on increasing, more rapidly as it gains strength.

CLEMATISES.

It has always been a wonder to me why *Clematis integrifolia* var. *Durandi* is not more grown than it is. I first saw it at the World's Fair, in the Holland collection on the Wooded Island, where it attracted considerable attention.

The type, *C. integrifolia*, is a non-climbing herbaceous hardy perennial from eastern Europe and has been known since 1596. It grows only two feet high and bears nodding, rather small blue flowers. The variety *Durandi* is a hybrid between *C. integrifolia* and some large flowered variety, and while partaking of the habit of *integrifolia*, inasmuch that it is non-climbing, it grows some three or more feet high, and produces a multitude of flowers often as large as a Jackmanni, and of a dark rich blue. If the seed pods are not allowed to form it will bloom all summer. It requires support, and tying. In the bud, its flowers resemble somewhat its parent, *C. integrifolia*, in that they are somewhat drooping, but they eventually flatten out and become almost erect. Ordinarily there are but four petals, but the crown flowers often have five. The photograph of the plant (the one originally on the Wooded Island) was taken last June. This plant seems entirely free from the clematis disease.

Another recently introduced clematis that so far has had immunity from this disease is Madame Edouard Andre, also a debutante at the World's Fair, belonging to the *Jackmanni* type, but not so robust a grower by any means as *Jackmanni* proper; nor is it as profuse a bloomer. My plant, although several years old, seldom reaches a height of over five feet and rarely has over twenty

flowers open at a time, still it remains in flower a long time. The peculiar shade of red in its flower is quite a departure from the blues and whites so often seen.

W. C. EGAN.

HERBACEOUS PLANT NOTES.

There is no lack of color and variety in a well arranged herbaceous border during the first half of May. Besides those plants mentioned in my last, which are most all in excellent shape yet, we now have the *doronicums*, rounded, well shaped bushes studded with a mass of bright yellow flowers. These several varieties differ somewhat in height; some of them, like *D. austriacum* and *D. caucasicum* do not grow much over a foot in height while others grow up to 2½ to 3 feet or more. Special mention should be made of the robust and stately *D. plantagineum excelsum*, which continues in flower for months; its flowers are of very large size, 3 inches across, and the plant grows over 3 feet high when once well established.

Dicentra eximea is now well out with both foliage and flowers and will last until late summer; compact clean and low growth, together with its unrivaled lasting quality make this one of our most desirable border plants. Its arching little flower spikes are not exactly of the brightest color, yet they are very pretty and if a bright yellow or a white flowering plant is introduced as an immediate neighbor or intermixed in the patch, a most striking effect may be produced. *D. formosa* is of a much brighter color and resembles the first mentioned, only the plant is much smaller in dimensions, but the flowers are rather broader. *D. spectabilis* and *spectabilis alba* are in excellent shape now and *D. canadensis*, a native white flowered pretty little thing with glaucous finely divided foliage, blooms freely.

The dwarf *Phlox subulata* is coming on fast now, forming dense carpets of white or pink over the ground; these pretty plants are not as extensively used as they deserve; there is no other class of plants from which we may expect so much pleasure and satisfaction with the least possible care; they provide our beds with a profusion of bloom, soon after the opening of spring, and after they are past flowering their densely matted growth covers the ground effectually with green for the rest of the season; even in mid-winter the mossy carpet is there and no cold, however severe, can hurt it. Among the white varieties *P. s. Nelsonii* is probably superior to *nivalis* when closely examined for size of flowers, etc. In the pink sorts none are as bright to my knowledge as the *P. s. Vivid* and it is really a great improvement over the older varieties. *P. amœna* does not lay so close to the ground as the former, being 6 to 8 inches in height, but is a most profuse bloomer, lasting, in perfection much longer than the *subulata* varieties.

Another low and compact free flowering plant for early blooming is the *Erysimum pulchellum*, which is just now attracting everybody's attention. The flowers are pale yellow, profusely produced in short elongated little clustered heads; they are rather small individually and would hardly be noticed if there was not such a mass of them distributed all over the little plant. The well known *Alyssum saxatile compactum* is fully out in sheltered and dry positions, while in more moist and shady places they are only showing color and will not be in bloom for a week yet. Single plants will easily cover a square foot of ground or



CLEMATIS MME EDOUARD ANDRE.

more inside of a year and produce many hundreds of its bright golden yellow little flower heads. The greyish foliage remains fresh during the winter months when the plants are in a dry and open position; in other situations or when surrounded by taller plants, the foliage is damaged occasionally by too much moisture; a dry place is decidedly more suitable for it.

The double yellow calthas make quite a show with their large globose flowers and their luxuriant young foliage at this time of the year; they must have a moist place, however, otherwise the first hot spell will stop their blooming. The same may be said of the trolliuses, one a light and the other a deep dark yellow globular flower on long erect stems; if they are in a dry border their flowering time is soon over, while in moisture retaining ground they will continue to send up their flower-stems until August or even later. *Asperula odorata* is covered with a mass of white flowers for a month or more. The blue *Centaurea montana* and its white and the rose-colored variety make quite a display in the border. A mass of *Arisæma triphylla* is very ornamental when closely planted; the luxuriant shiny foliage and speckled stems alone are enough to attract our attention even if the curiously shaped large and delicately colored flowers were entirely absent, but they bloom and grow quite freely in a somewhat moist and partially shaded situation.

Among the violas there is none which flower more profusely or show to better

advantage in the bed or border than *V. palmata* var. *cucullata*; the flowers are produced so abundantly as to cover the whole plant, the stems erect and stiff, holding the flowers well above the foliage, while in most all other species, they are hidden more or less among the leaves. Blue is a very desirable color at this time of the year when we have so much yellow among the hardy plants. No other violet has proved more satisfactory as a border plant, excepting, perhaps, the double flowering "German Empress" of the *odorata* section, which with us is the very earliest of all in the open ground, the flowers appearing all over the clumps before the foliage had time to develop its size; it is a very dwarf variety and never has very long stems, but the dark blue flowers are very double and literally cover the plant. The common *Lychnis flos-cuculi plena* with its rosy red pretty flowers borne on loosely branched panicles, should not be neglected; it is a most desirable color at present in the mixed border and well worth the little attention it requires in annual fall dividing, else the plants might become unsightly, for they are apt to decay in the center if they are left alone for several years.

In early spring all are anxious to have flowers in the garden, and bulbs are not always satisfactory because when planted alone in a bed the ground is left bare after their short flowering period is over. Combined with hardy herbaceous plants, many of them can be used to better ad-

vantage, and a succession of bloom may easily be kept up for any length of time if the proper selection is made. Any or all the plants mentioned can successfully be used in combination with bulbs, which would materially improve the appearance of spring flower beds.

For cut flower purposes among herbaceous plants during the first half of May we may mention the arabis, *Alyssum saxatile*, *Anemone sylvestris*, the doronicums, calthas, ranunculuses, candytufts, *Pæonia tenuifolia* double and single, *Lychnis flos-cuculi* pl., trolliuses, *Primula eliator*, *P. officinalis* and *P. variabilis* in variety. In more favored localities other hardy plants may be in full bloom, which with us are a week or two later.

Rochester, N. Y.

J. B. KELLER.

ANTS—DAFFODILS—MULCHING.

1. Please tell me how to drive away or kill black ants that have covered a flower bed and the grass walk in front of it, with their holes. The flower-strip is sown with Shirley poppies and I would like to put something on the ants that will not hurt the plants nor the grass. I have tried kerosene, gasoline, alum, red pepper and white hellebore, all in large quantities, but they have all failed.

2. Is it better for the flowering of the daffodils next spring, that I cut off the old blossoms now?

3. After setting a hemlock hedge, in good soil, not very rich, should a mulch of fresh manure or old compost be spread on top of the ground? There was no manure put in the soil in which the trees were set.

SUBSCRIBER.

1. The Horticulturist's Rule Book gives the following for killing ants: "A tablespoon of bisulphid of carbon poured into holes six inches deep and a foot apart, the holes being immediately filled up."

2. Yes, cutting away faded flowers from any plants and thus saving the strength that would go towards maturing seed, is of benefit to them.

3. A mulch of old compost is the best, the main object being to retain the moisture and keep the ground cool. Newly planted trees or shrubs do not need fresh manure over the soil the first year.

HOW THINGS WINTERED AT EGANDALE.

More plants were injured at Egandale (near Chicago) during the winter that has just passed than at any other similar season. The winter had as a rule been an open one until about the 24th of January, when suddenly the thermometer dropped to 25° below zero, and for several days refused to get higher than 18° below. After that the weather was more open than usual and rather moist. All the deutzias, except *Pride of Rochester*, were killed to the ground, although well wrapped, and the one named was badly injured. The same may be said of *Kerria japonica*, *Hypericum Moserianum* and the Ayrshire roses. The latter were large bushes that have been carried over successfully for seven winters. *Lilium Krameri*, *L. Wallachianum superbum*, *Linum austriacum*, *Geum coccineum*, died, while *Heuchera sanguinea* suffered considerably, although protected with evergreen boughs.

Nearly all the flowering buds of *Prunus Pissardi*, *P. triloba*, the Japanese weeping cherry, in fact of about all the Japanese flowering crabs, cherries and plums, were injured. Forsythias, both *suspensa* and *Fortunei* were injured, as well as *Spiræa prunifolia* and *S. canescens*. *Catalpa Bungei* was badly hurt. *Prunus*

Pissardi had to be cut back quite severely.

Akebia quinata, for the first time killed back considerably and had to be cut in severely. Established plants are, however, such rapid growers that the damage will soon be repaired.

At this writing specimens of *Retinospora plumosa* that had no protection seem to be in better form than those that had a ventilated box over them. The latter looked well enough until exposed to the sun, when they browned considerably.

My *Hibiscus (Olthaea) syriacus* were wrapped and came through in good form.

larger vine with beautiful purple settings, and when in full bloom the *paniculata* forms a solid sheet of white dotted and set with the purple, which gives a most charming effect.

No. 3 is a detail of the north end of the house. The railing of the steps support a white clematis. The logs and stone chimney are covered with *Ampelopsis Veitchii*, while on the extreme right is a cluster of *Ampelopsis quinquefolia* which covers the corner to the very peak of the roof. In the foreground is an old-fashioned petunia bed with a clump of white phlox. The *Clematis paniculata* is in my

cent pendulous shrub, when staked up and placed at the margin of a lawn.

Prunus maritima has again proved its hardiness and is now white with blossoms. The "Cook County Flora" mentions one plant as having been found growing wild on the banks of Lake Michigan.

Nordman's fir had almost every terminal and lateral bud winter-killed.

The silk vine (*Periploca græca*) killed back considerably and cannot be trimmed yet a while, because a robin has built her nest within it. We must encourage the birds even if we do have to place a net over the raspberries to save them, and a scarecrow among the garden peas, as the robin is very fond of nipping the new shoots as they appear above ground.

Five hundred *Narcissus poeticus* in a shady nook sweetens the air with their perfume and present a pleasing feature. This easily grown hardy bulb is not grown as much as it should be.

As usual Clothilde Soupert rose wintered well, a feature that taken with its free blooming qualities, places it in the front rank of garden roses. The miniature rose White Pet is another reliable rose well worth cultivation. W. C. E.



THE LOG HOUSE. No 1

A plant in poor soil in a neighbor's garden, that makes but little growth, is green to the tips. *Nevinsia alabamaensis* froze back some and may not bloom, but stood the cold much better than anticipated.

Hypericum aureum, from the mountains of Tennessee, is entirely uninjured. *Andromeda japonica* sent by Messrs. Thos. Meehan & Son for a winter's trial, passed successfully unprotected and is now making good growth. W. C. E.

THE LOG HOUSE, HIGHLAND PARK, ILL.

I send herewith some views of a vine-covered house as it appeared during the summer and autumn of 1896.

No. 1 shows the house looking from the southeast; on each corner and in the center is seen *Clematis paniculata*. The smaller cluster next to the left hand corner is an *Adlumia cirrhosa*, which has done well with me, although supposed to need wet woods and shaded places. The entrance on either side has each a healthy akebia, twining up and around the inside posts, but both are overshadowed by the clematis.

No. 2 shows a detail of the northeast corner of the porch. The vine covers a space twelve feet wide, and from the ground to the top of the vine is fifteen feet. The entire space is compact and the upper part of the vine droops three feet or more. There are two *Clematis Jackmanni* interwoven with the *paniculata*, which when in bloom dot the front of the

opinion the finest vine grown in this climate. My *Ampelopsis Veitchii* freezes down to within one or two feet of the ground each winter, but they make a beautiful base for the higher climbers.

Highland Park, Ill. S. M. MILLARD.

NOTES FROM EGANDALE, NEAR CHICAGO.

A group of two hundred *Trillium grandiflorum* planted last fall in irregular masses on a shady, slightly sloping bank, at the edge of a ravine, formed a most charming natural picture this spring. The mere fact that it seemed to be a colony in a home of their own choosing, and arranged in masses to suit themselves, lent an indescribable grace to the effect. These hardy spring blooming plants can be gathered in quantity in many places, and are not very expensive to buy.

Berberis Thunbergii came through the winter without a tip injured. A hedge of it some five hundred feet long does not show an injured spot as large as one's hand.

Ligustrum Ibota winter-killed to the ground, a fact to be regretted as it makes a handsome hedge. The common privet seems to be the only one that stands our winters.

Halesia tetraptera, our North American species, does well in our clay soil, not minding the cold and blooming freely. Its white pendent blossoms are quite showy.

Rosa setigera seems as hardy as the Japanese *R. rugosa*. It makes a magnifi-

DIVIDING HARDY HERBACEOUS PLANTS.

A newly planted bed or border of hardy plants is not expected to produce flowers as freely as an older plantation. The plants are not yet established in their new quarters, their roots have been mutilated more or less by dividing the old clumps, the plants are weakened by this manipulation and new roots have to be formed before we can expect any growth. Early spring flowering plants show the effects of dividing and transplanting more than the fall blooming section, which with good care have ample time to develop new roots and strong growths before their time for flowering arrives. In older borders it becomes necessary from time to time to divide the free growing and spreading plants, which may have run beyond their allotted boundaries and if we divide in fall or early spring we run the risk of sacrificing at least part of our spring flowers.

In such cases we advise waiting until after their flowering time is over. It is perfectly safe for instance to transplant or divide the arabis any time in June; with a little extra care the separated plants will form fine clumps by fall and be ready to bloom abundantly the following spring. The yellow *Erysimum pulchellum* should be treated in the same way and small pieces of *Phlox subulata*, *P. amœna*, and *P. reptans*, will grow freely during the summer so as to entirely cover the ground beneath. The aubrietias do not spread so very rapidly, but have a tendency to make long slender branches, leaving the heart or center of the plant bare and unsightly. Any time after flowering these long, bare and wiry stems may be layered or sunk into the ground; they will then make roots and form separate new plants before fall and if they are too thick some of them may then be removed to other quarters. One can not have too many of these little spring beauties and they occupy but very little space. The large leaved saxifragas should be divided as soon as the flowers have faded away and if the weather is dry, a good and thorough watering will greatly assist in re-establishing the plants.

Hepaticas are considered very sensitive as to any root disturbance, but after flowering is a better time to perform this operation than any other. They may

not really require dividing, for they may remain undisturbed for ten years or more, forming large compact clumps and blooming profusely year after year, but to increase the stock there is no safer time for separating the crowns than after their flowering; fall or spring division with them is usually followed by more or less dead crowns. Violets of all kinds and the dwarf double daisies can be divided as late as July without any risk of losing next spring's display. Mertensias and pulmonarias are sure to flower abundantly the following season if treated in the same way. *Omphalodes verna* may be separated and replanted any time in June; it surely will bring forth a multitude of its pretty forget-me-not-like blue flowers in spring, so will *Polemonium reptans*. The dwarf early flowering irises, as *pumila*, *cristata*, *olbiensis*, etc., if stock is wanted, can be taken up and divided, but when planted for show, a thinning out is preferable because old plantings invariably flower more freely. For dionyciums it is also advisable to defer division until after their blooming time is over; they are free growers and form good strong plants before winter sets in. *Asperula odorata* makes such a matted growth that it becomes necessary to replant every two or three years; if we do this in June we get the benefit of all the flowers from the old dense mat. The same holds good with the pretty *Stellaria Holostea*.

Primulas of most kinds should not be disturbed before their flowering period is over; they will be fully as strong and floriferous the following season if divided

some varieties become lengthened so much that the lower leafless part shows too much. The plants may not need dividing, unless we want to increase the stock, but they should be taken up and planted deeper so as to hide the bare neck of the plants; new roots will be formed along the stem and the plants will grow with renewed vigor.

We usually have more time to spare in

where plants have been dug up, in many instances may safely be delayed until after their flowering time is over, with the early blooming species at least; the later flowering kinds can be attended to as early as convenient in spring as these will not show the bad effects of disturbance at the roots to such a degree as the spring bloomers.

J. B. KELLER.

Rochester, N. Y.



No 2.

Trees and Shrubs.

SOME VIBURNUMS.

The earliest to flower of all viburnums that I know are two, *Lantana* and *cotinifolium*; these two are much alike, *cotinifolium* appearing as an improvement on *Lantana*, so that one description will answer for both. The flowers are white, in nearly flat corymbs, and are conspicuously beautiful in early spring. At this writing, May 17, the flowering is over. Berries succeed the flowers, which pass from green to red and from red to black, and often the three colors are displayed together at one time. The foliage is large, and appears early, and is maintained very late, much later than the majority of shrubs.

In the snowball section, the past few days have brought to perfection the old one, *opulis sterilis* and *plicatum*, variety *rotundifolium*. These two lead *plicatum* by about a week, hence are quite valuable.

Rotundifolium has dark red young wood at this season, and in autumn the foliage changes to a decided copper color. The "snowballs" are very large, the individual flowers are larger and perhaps whiter than *plicatum*, and the whole forms an irregular head, not as evenly rounded as in *plicatum*.

Viburnum Sieboldianum is in full display. This, too, is nearly evergreen. The large heads of flowers would almost pass for clusters of those of the elderberry; and then reddish black fruit follows. This is an extremely vigorous grower, making a small sized tree when grown to one stem, in which shape its large leaves and generally strange appearance make it an object of much attention. There is no need for anyone to brush against its foliage, but



THE LOG HOUSE. No 3

at this time. The weaker growers should not be cut up too small and for two or three weeks they should have an occasional watering if the weather be dry and hot. An open porous soil, where the roots can easily find their way downwards, is best for them, and they will here develop their flowers more freely than in a stiff and compact soil. Auriculas, with us do not require separating so often as the primulas, but after a few years of undisturbed growth the stems of

June than early in spring when so many other things require our attention, the general work is not so pressing and we can perform the operation of dividing and replanting with more exactness and be more careful with the rarer and less robust varieties, than we would probably be earlier in the season. The forking or hoeing over of the ground between the plants must be attended to as soon as the plants have made a fair start, but the replanting or filling out of the rows

if they do they may not object to the lan-tana smell which comes from the leaves, as I do.

In our hedge rows, and I wish it was more in cultivation than it is, is the beautiful *Viburnum prunifolium*. The flat heads of white flowers are well set off by the background of shining dark green leaves. And then the scent of the flowers is just the same as that of the hawthorn.

Viburnum Lentago is often mistaken for this. In fact, seeds received from botanical friends for it have yielded *prunifolium*. Not until I was fortunate enough to receive some cuttings from William Falconer could I claim to have it true. It is quite distinct. The leaves are larger, and they do not shine, the growth is freer, and it flowers a week later than *prunifolium*, besides other differences.

JOSEPH MEEHAN.

PYRUS (GYDONIA) JAPONICA.

At the Arnold Arboretum the special attraction at the present writing is the magnificent collection of *Pyrus japonica*, or the Japanese quince. This is a shrub which has been well known for a half century or more, having been discovered in Japan in 1815, its main use having been that of a formal hedge. Grown naturally with judicious pruning to keep it in shape it makes a handsome shrub being good both as a single specimen or used collectively in large plantations.

Here in the Arboretum the plantation comprises some twenty-five distinct named varieties grown to specimen plants ranging from 4 to 8 feet in height and the same in depth, the flowers ranging from a pure white to a deep red in color. The following varieties were noticeable either from their distinct habit, color or size of flower, or character of their leaves.

The type, *Pyrus japonica*, has a very dark red flower of considerable size; the foliage at this time takes on a purplish tinge and the habit is upright.

P. japonica Moorlosi is an extremely fine variety. In habit it is low with arching branches, in fact almost pendulous, the foliage very slender and narrow, while the medium sized flowers are pink and white in color.

P. japonica Wallardi is of medium good upright habit with flowers of the very darkest crimson in color.

P. japonica atrosanguinea is similar to Moorlosi, only the habit is not so airy, the flowers are not borne so abundantly and the leaves are much larger and not so narrow.

P. japonica macrocarpa is of a splendid spreading habit with dark foliage and medium sized flowers of a light carmine red color.

P. japonica folis rubris: The foliage is decidedly colored, the flowers salmon red in color, while the habit of the plant is very compact and not of the average height.

P. japonica rosea flore pleno has good semi double deep rose flowers of large size.

P. japonica versicolor: Flowers pink and white, the habit of the plant being very compact.

P. japonica atrosanguinea plena: In this variety the habit is very dwarf and compact and it is a decidedly free bloomer. The flowers, of a deep red, are only slightly double.

P. japonica grandiflora, one of the best; flowers very large, pink and white in color, and very fine airy habit.

P. japonica umbellata, also a very good variety, with flowers of deep rose color borne very abundantly.

P. japonica nivalis is a splendid white

variety, laden with medium sized flowers.

P. japonica simplex alba, the flowers a trifle larger than *nivalis*, the two last being both excellent varieties.

Pyrus (Cydonia) Mauleii, a more recent species of Japan quince, is also attractive; it is much dwarfer, seldom growing more than 3 feet in height and very compact in habit. It is more covered with thorns than the *japonica* type and the colors take on a different tone of reds and pinks than do the older Japanese quinces. Its various forms make one of our most beautiful of recently introduced shrubs.

CHAS. J. DAWSON.

LAGERSTROMIAS IN THE NORTH.

The beautiful specimen of *lagerstromia* which is represented in the cut gives a correct idea of the appearance of this shrub, so indispensable to the south. This and some other ones are varieties of *indica*, one of the oldest plants in cultivation, and which is found in most greenhouse collections at the north.

But it is really a hardy shrub further north than is supposed. Writers follow one another sometimes and this is why so many make Washington, D. C., its northern limit, just as they do for the English holly, the *Aucuba japonica*, *Magnolia grandiflora* and many other like trees and shrubs. The fact is that all the above mentioned sorts, including the *lagerstromia*, live out in Philadelphia.

What they ask is a sheltered place until they get root hold and some hardened wood. It is not saying that they need special care, any more than it would be to say it of such as prefer a damp or a dry place. If quite young plants are set out here, of the crape myrtle, as the *lagerstromia* is universally called, and left unprotected, it may be killed to the ground the first winter, and, in fact, for several winters until it in some mild winter gets through wholly or partly uninjured. After it gets wood over a season old, it rarely gets materially cut back in this neighborhood.

I would advise that a plant two or three years old should be planted, and that for the first winter it should be well mulched at the root and its top protected in some way. The last winter did but little damage to some plants under my observation which had no covering of any kind, many shoots of but one season's growth being but little injured. This plant is a native of China, and together with most other ones from that country, may be considered fairly hardy.

But there are many gardeners who prefer to house the crape myrtle in winter, as being less trouble than mulching, and running no risk. The plants are dug up on the approach of winter and beeled in in a cold frame or cellar just as is done with *Hydrangea hortensis*. When spring comes they are set out on the lawn, and then flower beautifully in July or later. The rosy pink seems the most common, the crimson next, while the white, which the illustration represents, being somewhat more tender than the others, is but little seen in outdoor collections, but does well when wintered in a cellar.

Philadelphia. JOSEPH MEEHAN.

HAWTHORNS.

The hawthorn is so greatly prized on the other side of the Atlantic that those who have seen it there naturally desire to have it here in their collections of trees and shrubs. Just how it came about that it was condemned as unsuited to this climate I do not know, but I do know that for thirty years and more I have been saying all I could to the contrary. So

far as this part of Pennsylvania is concerned there is nothing whatever against its doing well. On the contrary, of the many hundreds I have seen—yes thousands—in that time, I do not remember one that did not do well. I was told years ago that the leaves were the delight of mildews, but no mildew has ever been on those I have seen. Just at this time the many kinds, both native and foreign, are blooming here, and to-day, May 20, I took notice of some half dozen sorts in flower.

The English *Crataegus Oxyacantha* is in full display, as well as the most of its many varieties. Of the latter, among the colored ones, are Paul's scarlet, a double rosy scarlet, another known as double pink, and a beautiful single pink called *rubra splendens*. I may mention here that when a double and a single one are growing near each other, it is a good time for anyone to verify the fact that the double flowers are more lasting than the single ones. At the present time the singles are nearly over, while the doubles are good for another week at least.

Besides those named there is one known as double white, a most beautiful sort. This, though white when it expands, takes on a light pink color afterwards in which shape it is quite attractive.

A distinctive and useful sort is one called *grandiflora*. I have not traced up its lineage, but it bears almost solitary white flowers of large size, together with quite large leaves, rendering it easily distinguished among all others.

Macrocarpa is another large leaved sort, the flowers being white, single and in clusters as ordinary hawthorns have them.

One of the prettiest of hawthorns is a native species, *apitiolia*. The leaves are finely divided and only for this and its smaller heads of flowers it might easily be mistaken for an English hawthorn. And it gets quite tree-like in time.

Another native one, *cordata*, is flowering, but *coccinea*, another with fine, large flowers and large haws in the fall, has been out of flower for two weeks. It is one of the first to flower.

If any reader of GARDENING desires to plant a hawthorn, I would advise that the coolest situation be selected, which being done, I am sure one would thrive there, unless the climate differs greatly from that of this state.

Philadelphia. JOSEPH MEEHAN.

SOME UNCOMMON TREES AND SHRUBS.

Among the many beautiful shrubs and trees which bloom at this season, the 20th of May, are some which are not yet well distributed in collections. Almost all lovers of old-fashioned shrubs have the *Staphylea trifolia* in their collections, but very few of them have the newer ones, *colchica* and *Bumalda*. *Colchica* has pure white flowers, in good sized clusters, not unlike a small lilac. It is now out of flower, while *Bumalda* is in perfection. This one has smaller bunches of white flowers, not unlike the tall deutzias, and they are nicely scented.

Symplocos crataegoides will be popular if ever it is propagated in sufficient quantities. At present it is very scarce in collections. The pretty white flowers are in flattish panicles of about four inches in length, and are profusely produced. It belongs to the same family of plants in which are found the styrax, halesia, pterostyrax, etc., and indeed those acquainted with *Pterostyrax hispidum* would see in this *symplocos* a somewhat miniature representation of it. It is a good thing.



LAGERSTROMIA INDICA ALBA IN NEW ORLEANS

Photinia villosa is another desirable shrub. The leaves are smooth, glossy and pretty, and the pretty flat heads of white flowers have the hawthorn scent, so delightful to so many persons. It seems to grow to almost tree size, as does the *symplocos* mentioned above.

An extremely rare Texan shrub *Ungnadia speciosa*, has not only proved hardy here, but has now flowered two seasons in succession. For several winters it was killed to the ground. Two years ago it survived without protection and flowered in the spring. This spring it is blooming again. The flowers are pink, two or three in a bunch. Though not looking at all like a horse chestnut it is in the same order. Indeed its name *Ungnadia*, is in honor of Baron Von Ungnad, the introducer of the horse chestnut, as botanical works tell us. It pleases me to acclimatize such partly tender things. This leads me to say that the *Sapindus marginatus*, also from Texas, is perfectly hardy here, at least so far as last winter goes, several plants of it standing without the least injury. This tree is famed for its bunches of almost transparent berries which it has in the autumn.

Ceanothus ovatus is quite a different thing from *americanus*, the common one of our woods. It bears rather oval heads of white flowers at this period of the month, while the other does not flower for some time yet.

The great beauty of tree wistarias leads me to refer to them again. Any one can make a vine take on the tree shape by tying it to a stake for a year or two. The white variety of the Chinese is a lovely sight at this time, in tree shape, more so I think than the purple parent. At the same time let me recommend *magnifica*, one of the *frutescens* type. It is an exceedingly free bloomer, and its flowers come after the Chinese section have done flowering.

Philadelphia.

J. M.

The Fruit Garden.

LEAF SPOT OF PLUMS AND CHERRIES.

In Bulletin No. 98, the New York Agricultural Experiment Station (Geneva) described the leaf spot disease of plums and cherries, discussed the experiments in prevention of the disease made in 1895 and indicated spraying with Bordeaux mixture as a line of treatment promising success. The experiments were continued in 1896 and the results of the work are given in Bulletin No. 117 of the station on Treatment of Leaf Spot in Plum and Cherry Orchards in 1896. This is now being distributed and may be obtained free by application to the station. Bordeaux mixture has proven its efficiency as a preventive of the disease and is, for

plums, a practical and profitable remedy.

The bulletin discusses fully the experiments made with different numbers of treatments applied at different times and upon different varieties of plums, and shows the percentage of injury and the yield of fruit from sprayed and unsprayed trees. In the case of Italian Prune, upon which variety the disease was most prevalent in 1896, the best results followed three sprayings made May 25, June 17 and July 14. The amount of disease was materially lessened, though, when only two applications of the fungicide were given. The results indicate that in ordinary years, when the disease is no worse than it was in 1896, it may be practically controlled by two sprayings, one made ten days after the blossoms fall and the other three weeks later. The average yield of the sprayed trees of Italian Prune was 24½ pounds more per tree than that of the unsprayed trees and the cost of the gain was less than one cent per pound.

GOOSEBERRIES.

Gooseberries is the subject of bulletin No. 114 of the New York State Agricultural Experiment Station which has just been issued. The subject has been treated in an exhaustive manner so that the bulletin will be of great value to fruit growers and nurserymen who are interested in growing and propagating this fruit.

The different classes of gooseberries are discussed at length and their botanical features are given in a popular way so that any one may readily distinguish between them. For practical purposes cultivated gooseberries may be divided into two general classes, namely, European and American. The European class shows superiority in:

1. The large size and variety of colors of the fruit.
2. The early marketable condition of the green crop. This is an advantage because the green fruit is not as easily injured in handling as is the ripe fruit; it is exposed for a shorter time to sun scald, cracking and attacks of mildew; the early prices are usually as good or even better than the prices of the ripe fruit; when the fruit is marketed green the plant is partially relieved from the exhausting process of ripening the fruit and the seed.
3. That European varieties are preferred at fruit preserving establishments.

The best American varieties are superior to the European gooseberries as a class in 1. Productiveness. 2. Hardiness. 3. The ease with which they may be propagated. 4. Quality, delicacy of flavor and thin texture of the skin of the fruit. 5. Freedom from mildew.

Prominent fruit growers report yields of American varieties of from one-half ton to four tons per acre. The largest yields of the American kinds are greater than have been obtained from the European varieties and the latter should not be planted unless one is prepared to contend with the mildew.

The pages of the bulletin contain numerous cuts illustrating the botanical features, habits of growth and life size pictures of fruit of the different classes. The different methods of pruning are also shown as well as some of the injurious insects and diseases.

There are now two hundred and twenty-two varieties of cultivated gooseberries growing on the Station grounds, besides numerous Station seedlings and specimens of native species. The cultivated varieties are being carefully tested and brief notes are given on those varieties that have borne fruit.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS or SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE WIFE of Mr. P. J. Berckmans, Augusta, Ga., president of the American Pomological Society, died May 12. Mr. Berckmans will have the sincere sympathy of a host of friends in horticultural circles.

THE native *Azalea calendulacea* is very showy now, its orange flame flowers making a great show. The Ghents are also excellent, as they are so covered with flowers in good seasons like the present.

CERCIS CANADENSIS is now one of the showiest blooming trees in Lincoln Park, Chicago. These specimens are some fifteen feet high, and having reached their full blooming age, are a mass of light red bloom completely hiding the leafless branches.

THE summer meeting of the Missouri State Horticultural Society will be held at Springfield, Mo., June 8, 9 and 10, on invitation of the Greene County Hort. Society. There will be an exhibition of fruits and flowers in connection with the meeting. L. A. Goodman, Westport, Mo., is secretary.

WHERE a permanent support is not provided for any of the varieties of climbing clematis, use a strong hempen wrapping twine not any thicker than the lead in an ordinary lead pencil. This is strong enough to carry it through the season. When fall comes cut the string at the top, and vine and string a foot above ground, and the whole thing is done in a minute. Chicken wire or any meshed wire of similar character warps and always looks untidy.

PYRUS (MALUS) PARKMANI, planted some years ago by Mr. Pettigrew east of the propagating houses in Lincoln Park, is now in full bloom for the first time.

THE Horticultural Society of Toronto, Ont., recently held a meeting devoted exclusively to a discussion of pansy culture. An exhibition of pansy flowers added to the interest.

THE TRUSTEES of the Missouri Botanical Garden, St. Louis, recently enjoyed the eighth annual banquet provided for by the will of the late Henry Shaw, who presented the garden to the state and also liberally endowed it. Many distinguished botanists, entomologists, landscape architects and horticulturists participated. Mr. Shaw also provided for an annual flower sermon, which was this year delivered by an eminent New York divine who visited the city to attend the banquet above noted.

JOHN SAUL, the veteran horticulturist of Washington, D. C., died May 11, aged 77 years. Mr. Saul was born in Lismore County, Ireland, December 25, 1819, and was educated in the art of landscape gardening. When he reached his majority Mr. Saul went to the Isle of Wight and a few years later to Bristol, England, managing large nurseries in both places. In May, 1851, he came to Washington. Shortly after his arrival he was employed by the government to lay out Smithsonian and Lafayette Parks and several other public squares in the city. He was also engaged by the late W. W. Corcoran to beautify Harewood Park. A year after his arrival here Mr. Saul bought the site on which he built the house in which he died. His business as florist and nurseryman acquired a national reputation. He was particularly fond of rare and odd plants and what could not be found elsewhere could generally be secured from him. He was a member of the Society of American Florists, the American Pomological Society, and many other organizations. He was for many years chairman of the District Park Commission, and held this position still at the time of his death.

The Vegetable Garden.

A TALK ABOUT VEGETABLES.

BY J. OTTO THILLOW.

[Read before the Pennsylvania Horticultural Society April 20.]

The subject "Vegetables" is of wide range with many phases. Each of the branches pertaining thereto, viz., varieties, quality, soil and treatment, fertilizers, etc., could be dwelt upon quite extensively.

It would be rare to find any one not interested in vegetables in some way; if not in the studying and cultivation of them, why surely in preferring one or the other varieties as food. The average person is generally a judge of good vegetables when cooked. While such is the general opinion, would it not be well to dwell for a moment on the matter of selection of vegetables for the table, which is a privilege given us every day in the year, as one or the other of these products is placed at our disposal throughout the entire year, the new crops being ready for use when the old ones are just done. Since the mode of transportation connects the extreme parts of the country, north and south, by a few hours, it is quite the custom now to cut asparagus in Georgia and the Carolinas and use them twenty-

four hours later in Philadelphia or New York; hence the long season given this excellent vegetable by having so wide a range of country to draw from. The same is also true of beans, beets, peas, potatoes, lettuce, cucumbers, kale, spinach, melons, etc.

Just here it is well to emphasize the importance of care and judgment in selecting vegetables for the table. A close inspection will reveal any imperfections and decay which must be avoided. Beware of kale with yellow twigs, spinach with browned ends, lettuce which shows decay at the stem, tomatoes with shrivelled and leathery skin, peas with yellow and shrivelled pods, radishes with decayed tops, corn with husk dry and yellow or with contracted grain; in this vegetable it is especially necessary to get fresh, or it will not be sweet. Egg plant should not be fully grown. Cucumbers only as long as the seeds do not interfere in slicing. Kohl rabi, half grown; these would be unfit for use if fully matured. Okra in same condition as cucumber; as long as the seed is soft enough to cut through in slicing. Salsify can be used in any size, same as parsnips, as size does not interfere with tenderness and quality. Squash, summer sorts only while tender, but the fall and winter sorts must be matured.

The above are some of the leading types of vegetables which require judgment in selecting, and this selection also applies to the gardener growing them. He must use discretion in gathering his crops. It is much better to plant frequently, at stated times, and have the supply abundant and rather discard the overgrown stock entirely, as the skill of selecting vegetables in proper condition for the table is of as much importance as growing. Those who have not the opportunity of gathering these from their own gardens have the chance (if they live in cities) of securing from local truckers vegetables fresh and in good condition, as these are always gathered in the afternoon before market days and kept in fresh condition, protected from the drying winds.

There are several sorts of the finer types of vegetables not grown by our market gardeners, which can be readily grown, viz.: Globe artichoke, also the Jerusalem artichoke, of which the tuber is used; this latter variety is an excellent vegetable, although the seed catalogues describe it as useful only for pigs; properly prepared it is very good for the table; Brussels sprouts are not generally grown in this latitude but can be; cardoon, now coming into cultivation by private gardeners; dandelion for salads. Sea kale, used like asparagus, is also one of the delicate flavored vegetables which should be in every garden. Sorrel should be grown more extensively; it is one of the acid vegetables which add much to the taste of salads. Too much cannot be said in favor of the herb family. No garden is complete without a collection of the leading sorts of these useful plants. Borage is especially fine for salad.

It is true that all vegetables do not and cannot exist and produce under the same treatment, same fertilizers and cultivation; and, from information given out by our Experimental Stations after their exhaustive experiments with fertilizers, we are inclined to believe that each type of vegetable needs its individual fertilizer. But rather than confuse the average amateur with this intricate mode of procedure, I would suggest some of the general principles upon which successful vegetable growing can be conducted.

Fertilizers are important. It is well

known that animals, especially young animals, must have all the food they can eat in order to properly develop and grow fat; and this is equally true of plants. They will live on very little food, but to grow, thrive and bear fruit they require an abundance of food in the soil. These foods consist of a number of elements, including nitrogen, phosphoric acid, lime, magnesia, iron, silica, potash, etc. A sufficient quantity of all of these necessary elements, except nitrogen, phosphoric acid and potash, exists in nearly all agricultural soils, nitrogen being always deficient, phosphoric acid usually and potash often. This to some extent gives us an opportunity of knowing what to apply, when and how often. Soil and its condition can be judged by the average person interested in horticulture, as to whether it is fit for producing or worn out or whether it can be brought up again. Do not select a spot not possible to drain, but, if possible, a southeast, south or southwest exposure. The idea generally prevalent is to use stable manure. This we also believe to be the first constituent, but it should not be used first, last and all the time, as this will furnish ammonia, nitrogen and weeds, and about 70% water; it is nevertheless the best to use for sub-soiling, and then it should be thoroughly rotted.

This is the first and most important work toward establishing a garden. Thereafter any crop can be grown for a number of years consecutively with a variation of the different chemical manures. The contents of same are nitrogen in nitrate of soda, phosphoric acid in bone, potash high grade in muriate of potash at once soluble, and in hard wood

ashes about 6% available. These can be applied alternately: the potash in fall or winter on the bare ground, the nitrate of soda on the growing crops, the phosphoric acid at any time during the year, better during cultivation. Inasmuch as it is well to know what and when to apply, it is also well to know how much. A little and often is the best method and the most economical. No garden should be without nitrate of soda and muriate of potash. A light sprinkling of either of these, before rain, will show marked improvement in growth in twenty-four hours. They must be thoroughly pulverized.

Our experimental stations have been close students of the different uses of commercial fertilizers and have published the relative value of each brand. It is doubtful whether we appreciate fully the efforts put forth by those appointed to that work, and any one can have these exhaustive bulletins upon application.

The time of sowing and planting is so generally known among gardeners and amateurs that we need not dwell upon it here. The seed catalogues are generally quite instructive on that line.

Experiments lead to many improved methods. Celery, for instance, is grown by different methods, each gardener having his own idea. I will note the various experiments made at the New Brunswick Experiment Station last fall with celery, particularly showing the results of watering below and above ground. About six double rows were planted, each double row about 30 feet long, some being on the surface and some in trench. The advanced growth made by that receiving underground irrigation was especially noticeable. This was done by laying 3-

inch ordinary round or horseshoe tile between the rows when planted. As the trench is filled with soil, the tile becomes submerged, but at each end of the trench it is raised up enough to expose the ends, into which water is run. This was done at the time when all the other samples were watered, and at the time of my personal inspection (September 24) this row was nearly twice the size of the rest.

Among the different varieties of vegetables such as are best suited to the average garden, comparative tests are made every year at Riverton experimental grounds. Several hundred specimens are secured from various parts of the world. These are put in competition test and the merits of older sorts compared, and the good qualities of the newer sorts ascertained. I also believe it to be of great advantage to reduce varieties and types as much as possible to a few, and those few possessing quality, character, hardiness and especially distinctiveness. Of the varieties of the different classes there might be named those of special merit for open air culture:

ASPARAGUS.—Eclipse, Elmira and Palmetto of the green class, and Columbian White.

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In this latitude planting may be begun quite early, viz: April 1—Extra early peas, beets, celery, carrots, leek, lettuce, onion, parsley, salsify, spinach. April 15—Wrinkled peas, cabbage, cauliflower, parsnip, radish, turnip. May 1—Beans, all sorts, and corn. May 15—Egg plant, cucumbers, melons, okra, pepper, squash, pumpkin, tomato. Beans may be planted every ten days until August 15; peas every week until June 15, and then the extra early sorts August 1 to 15. Corn

[CONCLUDED PAGE 286.]

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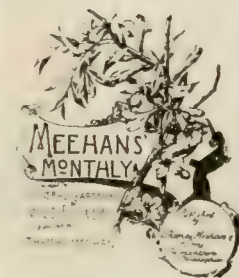
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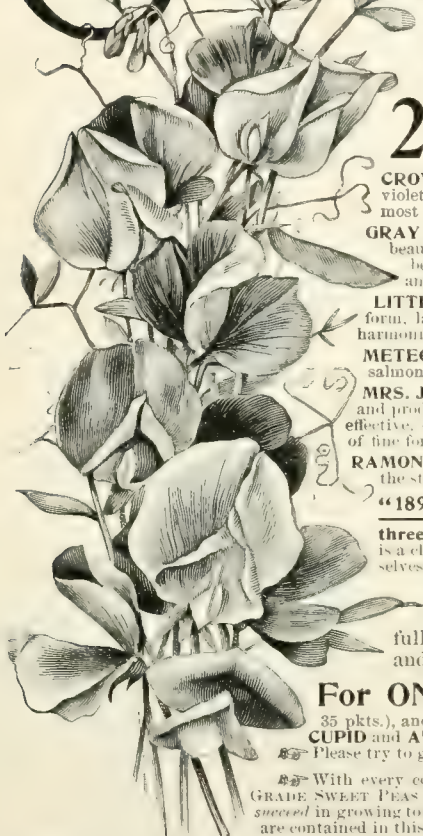
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ONION CUT WORMS.

A publication of special interest to growers of onions has just been issued by the New York Agricultural Experiment station (Geneva). This is Bulletin No. 120 which gives the details of a study of onion cut worms and the results of tests of methods of combating them.

The ravages of these worms have caused great alarm among the market gardeners and onion growers of Southeastern New York; for in 1895 they did much damage and in 1896 seriously affected the yield of nearly all vegetables in that section and destroyed about 46 per cent. of the onion crop. They are usually present in greater or less numbers wherever succulent crops are grown and their injuries are regarded as a matter of course and are disregarded; but such wholesale destruction called for decided efforts toward their repression. One of the station entomologists began work in 1895 to determine the life history of the pests and to develop a successful plan for checking their ravages.

It was found that most of the damage was done by the Dark-sided cutworm, *Carneades messoria*, one of the climbing cutworms. The bulletin discusses at some length the obscure points in the life history of the insect and locates quite definitely each stage of development though there still remains doubt as to some details.

There is but one brood a year, the young worms appearing in the spring upon the grass and weeds which line the fences and ditches and waste spots about the fields. From these neglected or uncultivated places the worms advance to attack the young onions, and so spread over the fields by degrees though often quickly. An opportunity is thus given to stay their progress by putting across their line of march a barrier of poisoned food; and this plan was successfully used by the station.

Spraying the young onions with a poisoned resin lime mixture, sprinkling the worms while at work with kerosene emulsion, and the use of poisoned green or moistened baits proved ineffectual or had some serious objections; but the dry bait of bran and middlings and Paris green was easily applied by means of the onion seed drill, was eaten readily by the worms and was deadly in its effects.

The bulletin gives illustrations of the work of the worms upon different classes of soils and in different parts of the fields, discusses in a concise manner the various experiments and gives careful directions for preparation and distribution of the poisoned food.

Any one whose crops have suffered from cutworms should apply to the station for a copy of the bulletin, which will be furnished without charge.

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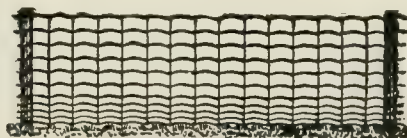
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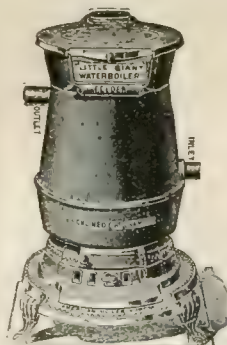
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BELT OF LILACS IN THE ARNOLD ARBORETUM, BOSTON.

Trees and Shrubs.

LILACS.

I wish that all the readers of GARDENING might have been able to visit the Arnold Arboretum during the last week of May and see the large collection of lilacs then in bloom. This collection, which contains about 120 named varieties of the justly popular and common lilac (*Syringa vulgaris*) has attracted the attention of the public more than any other collection of hardy shrubs of one class that I know of.

These lilacs are planted in one long irregular bed extending for nearly a quarter of a mile along one of the main avenues, between the avenue and the sidewalk, giving all classes of people an equally good chance to see them. They are all grown into specimen plants ranging in age from 6 to 14 years, and in height from 3 to 10 feet. This lot of plants has been in the same position now for five years and as they were all planted with the idea of obtaining perfectly grown specimens for many years to

come, they show off their individual points and character superbly.

Looking down the avenue (for the bed is on a decided incline) one is bewildered by the sight, for it appears like a mammoth show house in full bloom, the colors ranging from the purest white to a very dark heliotrope, the lilacs, lavenders, blues and pearls of various grades blending beautifully together.

The plants are all grafted but we would prefer to have them on their own roots, for two good reasons: The first, because it would save the trouble of going over the lot once or twice a year and taking out the suckers which generally spring up in great profusion from the stock; and secondly, because the borers are playing havoc in some of the main trunks of the plants. As we are obliged to confine ourselves to one stem on the grafted plants, the results from the borers are very disastrous, whereas if the varieties were on their own roots we could depend on the suckers in case of mishap; therefore I would advise, if possible, in planting the new sorts of lilacs to get them on their own roots. At present this is practically impossible as I know of few plants in that condition, but we have got to come to it eventually.

In giving a list of the varieties I have endeavored to give only the best and describe their distinct qualities. This has been particularly difficult to do with the "Queen of Hardy Shrubs" (as I have sometimes heard the lilac called), as the colors run so closely together in the lavenders, lilacs and blue tinges. I have given the colors as an artist friend and myself have decided upon after long deliberation, both from a short and long range, and trust that they may be satisfactory and true.

BEST OF THE SINGLE WHITES.

Frau Bertha Dammann is one of the best of the pure white types, the trusses being large and heavy and longer than *alba* which still stands well up as the purest white of them all, though the truss is rather short.

Alba grandiflora makes a remarkably fine specimen, the very large trusses of creamy white flowers being well set off by the exceptionally large and numerous dark leaves.

Marie Legraye is still my preference for a white lilac; the dwarf habit is excellent, the trusses not too long, very well formed, and the slight cream tinge in the flower makes it an A 1 variety.

Virginalis is also good in the creamy whites, the truss being quite long and larger in diameter at its base.

Mme. Moser is a variety that will undoubtedly prove good if not the best of white lilacs. In habit it is perfect and is also a very strong grower. Its foliage is of the very best style while its truss is the largest of the pure whites.

Schneelawine is so near white that I shall class it with them, though it is

TRUE LILAC COLOR.

(There are many varying slightly in the shades of lilac.)

Eckenholm has a very long, full-sized spike, and is of an excellent habit.

Dr. Regel, a superb variety both in its habit and freedom of flowering. The pinkish lilac trusses are very large and erect.

Rubra Trianoniana makes one of the finest specimens we have, of medium

in form, but the color is a superb blue, which makes it very noticeable.

DOUBLES.

The double lilacs are now so numerous and good that I hesitate in giving a select list, as all are very desirable. As a rule the foliage is heavier and darker than that of the single varieties and the trusses or panicles are sometimes twice or three times as large as in the single varieties. The flowers are borne closer together, making the truss very heavy.

Virginité is probably the most distinct double lilac, the delicate rose pink being a new shade in lilacs. The plant is as yet not over and above strong. The truss is loose and airy in habit and the foliage is somewhat like that of *Syringa oblata*, only more pointed at the end of the leaf. A most refined and beautiful lilac.

President Grevy has one of the largest trusses in the lilac family. The color is a lavender lilac. The individual flower is of wonderful size while the foliage is exceptionally good.

Condorset also bears a very heavy truss with good foliage and blue lilac flowers. Very fine.

Compte Horace de Choiseul I would say was the darkest of the double sorts. The color of the flowers is a decided reddish purple, the truss being very heavy and compact.

La Tour d' Auvergne is similar in color to the above variety but a trifle paler. The habit of the plant, however, is perfect. Very fine.

Leon Simon is a remarkably distinct variety, the truss only of medium size as seen here, but very heavy, in fact the flowers are crowded together on the truss more than in any other variety. The color is a sort of bluish crimson.

Pyramidal is a variety with a dwarf habit, and, as the name denotes, long pyramidal clusters of lilac colored flowers. A fine variety.

Michael Buchner has trusses of medium size flowers, a pale lavender in color.

Mathieu de Dombasle makes an extremely long bluish lilac truss and is a very sturdy grower.

Alphonse Lavalée is bluish lilac, the truss very large, while the entire appearance of the plant is the most striking of any in our entire collection. It is considered the most perfect specimen.

Lamarck is a splendid variety, pale lilac in color, when full blown the buds having a decided crushed strawberry tinge and when combined with some full blown flowers makes a handsome truss.

I have tried to make the list shorter but even now I have been obliged to leave out a number of fine varieties.

CHAS. JACKSON DAWSON.

Arnold Arboretum.

NOTES ON TREES AND SHRUBS.

The rose acacia, *Robinia hispida*, which is beautifully in flower at this writing, May 26th, is usually grown on its own roots in this country, hence, as it is a slow, shrub-like grower, it does not make the appearance it does in Europe, where it is usually grafted on the common yellow locust, *Robinia Pseudacacia*. It is not so grown here, because of the borer which attacks the yellow locust and which destroys so many of the young trees.

Styrax Obassia is a valuable Japanese tree. It has been introduced for some time, but it is still quite scarce in cultivation. It is in flower now, the drooping racemes of white flowers being some six inches in length. The leaves are large and handsome, and altogether the tree is



LILAC FRAU BERTHA DAMMANN.

decidedly distinct in color from any other lilac I know. After it has been in bloom for two or three days I would describe the color as being pearl with a pinkish cast. This variety is very distinct and novel.

DARK SINGLE.

Philemon is certainly the king of the dark lilacs. The color might be described as a deep heliotrope with a possible reddish tinge scattered through. The truss is quite long and perfect in shape, while the habit of the plant is very tall and upright. Souvenir de L. Spath is identical with Philemon, the similarity of the two varieties in different places and here being very marked. Which name has the preference I do not know.

Pres. C. S. Sargent: The habit of this variety is more compact than that of Philemon. The truss is very thick while the color is almost a true heliotrope with a slight bluish cast. A very good variety. Pres. Massart is another good variety of the heliotrope color.

Rubra insignis is a remarkably sturdy variety with a very heavy short truss, the color being mauve or reddish purple. A very fine variety.

height, the compact trusses being true lilac in color.

Furst Leichtenstein is noticeable on account of its very upright character. The color of the trusses is a pinkish lilac.

Charles X needs no mention as it is well known to be the best of the lilac shade.

Emil Liebig is one of the very best of the pale lilac type, and is a remarkably free bloomer.

Gigantea is a remarkably fine specimen, perfect in form, excellent large and rather long truss, in color almost pearl with a very slight light pink tinge. Very distinct.

Lilarosa is a splendid variety, bearing a great many clusters of true pink flowers.

BLUISH TINGE.

In this color we find many, too.

Cerulea superba stands at the front. It is of good upright yet graceful habit, the trusses of medium size only, but borne in great profusion. The color is a decided blue.

Prinz Notger has a long and airy truss, the color almost indescribable, a sort of dull bluish lilac. A very odd variety but not specially attractive.

Vergissmeinicht has a truss rather loose

quite unlike any other one. It is to be hoped some quick way to propagate it will soon be discovered.

Those who live where the *Paulownia imperialis* is not hardy, are worthy of sympathy. At the present time several large trees of it in bloom here are a magnificent sight. The blue, trumped-shaped flowers are in immense panicles, and their odor is delicious. I never saw the trees so floriferous as they are this year. So many who live north of Philadelphia complain that this tree winter kills with them. Well, it does the same here for the first year or two of its seedling life, but not afterwards. Let me recommend to GARDENING readers to protect their young trees of it for a winter or two, until some hard wood is secured. I am sure they would have a better chance with it then. I have never known a tree of it to be injured after it had passed its second or third year.

What beautiful and valuable shrubs are the late blooming lilacs, *S. Josikæa* and *S. Emodi*! These are different species from the old garden lilac. *Josikæa* is the Hungarian lilac; *Emodi* is from the Himalayas. Both are flowering now, after all the common ones have disappeared. *Josikæa* is of a dark purplish lilac. *Emodi* is pink in the bud and almost white when expanded. Then both have handsome foliage. *Emodi*, when of vigorous growth, has leaves reminding me of vigorous ones of the bird cherry, *Cerasus Padus*. I think both of great value as flowering shrubs. And while mentioning lilacs I might add that double ones of the common form are valuable because the flowers are more lasting than single ones. I noticed to day perfect heads on *pyramida-*

with light sandy loamy soil cannot be found for it, provide it for it, gaining the shade for the soil by mulching. Sometimes fine specimens may be found flourishing in open clearings, but in such cases the roots have gotten down some distance and its own branches shade the

as *floridus*, though good enough in its way.

Philadelphia.

BECHTEL'S DOUBLE FLOWERING CRAB.

This perfectly hardy double flowering crab is now in bloom and might well be



LILAC ALPHONSE LAVALLEE.



LILAC RUBRA TRIANONIANA.

lis and M. Lemoine, two good double sorts, while not a single flowered one could be found.

Many persons do not succeed with *Kalmia latifolia* because they plant it in the full sun. It wants partial shade, chiefly, I think, on account of the dislike of its roots to hot soil. If a shady place

ground to some extent. This season its flowering is unusually profuse.

The good old sweet shrub, *Calycanthus floridus*, is getting scarce. For some years past an inferior species, *lævigatus*, has been widely disseminated for it, its seeds having been distributed from Tennessee. It is not nearly as sweet scented

called the rose-flower crab, as each blossom of the cluster so closely resembles a miniature rose, both in form of flower and color of petal, as to mislead even those accustomed to growing plants. It is a form of one of our wild crabs (*Pyrus angustifolia*) and safely stood a temperature of twenty-five degrees below zero last winter.

It blooms while quite young, and even small plants are handsome, but when one sees a specimen, ten or more feet in height, thickly crowded with its miniature roses, perfuming the air for quite a distance around, he is sure to be captivated by it. This is certainly a tree for the people. For a few winters after planting, if there are young rabbits around, it is well to wrap the trunks with straw or gunny sacking or give any protection that is effectual, for these fleet-footed pests are very fond of the young bark of this species. When planting them, they should be well cut back, as should all hard-wooded trees.

THE CUT-LEAVED BIRCH.

We have received the following letter from Prof. Budd, of the Iowa State College:

"Yours in regard to history of cut-leaved birch came when I was very busy and this summer I have no assistant. Indeed during the past twenty years my assistants have been promoted to full professorships after one year's preparation. The last three—Kiefer, Hansen and Schulte, are all in the employ of Secretary Wilson at Washington. Hansen starts soon for seed and plant gathering in the valley of the Amur, Mongolia, and North Central Asia.

As to the cut-leaved birch, it is a sport from *Betula amurensis*, on the grounds of the Agricultural College at Petrovsky Rasumovsky, near Moscow, Russia. We

have on the college grounds at Ames the typical *Betula amurensis*. It is like the cut-leaved in all respects except that its leaves are entire. The cut leaved variety is defiant to heat and cold and trees 30 years old grow more beautiful each year. But in the moist climate of West Europe it fails in the top when the native white birches, much older, are perfect.

All the shrubs and trees we have from the valley of the Amur are perfect in our

Perhaps the most showy of the styraxes is *japonica*. It certainly is the most prolific of bloom of all known hardy sorts. The flowers are clustered along the branches on long stems, all hanging downward, and being white, as the flowers of all the species are, they are not unlike cherry flowers in appearance. So profusely are the flowers usually displayed that its leaves are almost hidden from view, which I think a disadvantage,

flowers at this season, and is far from being unattractive. The other one, *grandifolia*, is well named, as its foliage is much larger than that of any other one, which adds much to its value. Besides this its flowers are large, and altogether it is an attractive large shrub. It is a pity that these native shrubs are so rare and so hard to propagate. It does not seem possible to procure them from any collector, though they are said in botanies to grow wild, from Virginia to Florida. The specimens that I have seen were from near Atlanta, Georgia.

Pterostyrax hispidum is the name under which a beautiful tree came to us from Japan. At the present time the Kew authorities make it a *halesia*. But save for its wood, which certainly has much of the *halesia* look about it, no one would think it was one. The leaves are quite large, and it evidently is a tree of good size. At the present time the flowers are a great attraction. They are produced in pendulous racemes of six inches or more in length, the flowers creamy white, small, but very numerous. Clustered among the large green leaves, the whole forms a beautiful picture. This fine tree seeds freely and can be propagated from seeds very well.

JOSEPH MEEHAN.

Philadelphia.

OUR NATIVE STUARTIAS.

The *stuartia* and *gordonia* are the only representatives of the order *camelliaceæ* in our country. The *stuartia* of which I now wish to speak, exists in two species, *virginica* and *pentagyna* and in their wild state are found from Virginia to Florida. At the present writing *virginica* is in flower, and a more beautiful shrub than it is would be hard to find. The flowers are large, two to three inches in width, white with a cluster of purple stamens at base, adding to their beauty very much. The resemblance to the flowers of the *gordonia* is easily discerned and both lead one to think of a single flowered *camellia*.

If but large bushes of this fine shrub could be had its propagation would not be difficult, as seeds grow freely, but it seems to be exceedingly rare in cultivation. It is said to be not as hardy as the other species, *pentagyna*, but of this I cannot say. With us in Philadelphia it is perfectly hardy. At the present time it is in full flower, and one bush, six feet high, which I saw to-day, had on it upwards of fifty flowers.

This one leads *pentagyna* in flowering by about one month. Besides this its foliage and flowers are unlike the other, being better, I think. But *pentagyna* is a handsome shrub, and being less scarce than the other, can be and should be added to collections where it is now a stranger. Besides flowering later, in many dozens of specimens of the shrub which I have seen, there is an entire absence of the purple stamens in the white flowers which distinguishes *virginica*. Mr. William Falconer once wrote me that he had under his charge *pentagyna* with purple stamens.

Besides these two beautiful native sorts there is now in cultivation another, from Japan, called *pseudo-camellia*, also with white flowers, and a most desirable shrub.

JOSEPH MEEHAN.

Philadelphia.

RE-INVIGORATING LARGE OAKS AND CHESTNUTS.

What can be done to start growth in a grove of oaks and chestnuts, mostly 20 to 24 inches in circumference and 40 feet



LILAC CHARLES X.

climate. They come into leaf and flower very early in spring yet a severe freeze does not hurt them. As an example we have known the Siberian almond in blossom in March to be caught by a freeze that made quite thick ice. Yet it gave a crop of almonds in August. Hence I am hopeful that Prof. Hansen will discover in the valley of the Amur and North Central Asia many plants, grains, and grasses, that will be valuable additions to our lists."

BEAUTIFUL STYRAXES.

In the natural order *styracæ* are some of the most prized of ornamental trees, more especially since the introduction from Japan of some worthy members of it. I refer chiefly to the species found in *symplocos*, *styrax*, *halesia* and *pterostyrax*. At the present time it is my intention to refer to but the *styrax* and *pterostyrax*, as they exist in collections in this country. The members of these two genera are flowering now, giving an opportunity to see the good points in the various species.

as a good appearance of green would set off the white flowers to better advantage. This species is usually catalogued as a shrub, but it generally forms a single stem, and might be deemed a small tree. Fortunately it seeds freely, which permits of its easy propagation.

There is in collections a species called *Obassia*, which promises to become a valuable tree. It has very large foliage, unlike any other tree I know, and it bears drooping racemes of white flowers, some six inches in length. This one flowers before any of the others. From the appearance of the few that I have seen, I think it promises to become a tree of good size. This was in flower two to three weeks ago.

There are two native species, sometimes, though but rarely, met with in cultivation. I refer to *americana* and *grandifolia*. Both are flowering now. *Americana* is a weak grower of a somewhat straggling habit. The racemes of flowers contain but two or three flowers in a cluster, usually; still when in a flourishing condition it displays a great many

or more in height? They are on a somewhat rocky knoll or slope of land. Only a few branches on the tops of these trees have any foliage, and there has been no real growth for several years. I have thought of cutting them back and of broadcasting some sort of fertilizer. Also of taking out some where they grow too close together. Any advice will be appreciated.

F. C. D.

Connecticut.

It is evident that the grove needs food, as the dimensions of the trees are not those of full grown ones. As but the tops show much life, cutting back would not help them. What is required is a good supply of manure, and perhaps some of the weaker trees thinned out, as suggested. The manure could be placed there at the present time to good advantage, or even in the fall, and good results would be visible the following season.

It is not uncommon to see groves in the condition this one is. In a wild state the fallen leaves and decaying twigs furnish food for the trees. This in many cases they do not get when the grove becomes part of the pleasure grounds, the leaves being raked up and carted away, and the trees under such changed conditions do not thrive.

NOW IS THE TIME to trim into shape your lilac bushes. Cut out the faded blooms and cut back all straggling shoots so as to make a compact, shapely bush. The same can be said of all spring blooming shrubs. *Spiraea Van Houttei* should



LILAC CONDORSET.



COMMON WHITE LILAC.

have most of the old flowering shoots cut entirely out, or back to some strong growing new shoot if it is desired. This shrub will bloom next spring on wood made this year.

KEEP THE SOIL well cultivated and open around all newly planted shrubs and trees. In fact this applies to all your cultivated plants, but newly planted material need it most as they are not estab-

lished yet and need all the aid you can give them. This should be done especially after heavy rains or artificial watering, as the soil has been compacted. Stake all large trees newly planted, and small ones if in a windy situation. The main anchoring roots of these trees were destroyed in removal. When heavily swayed by the winds the newly formed roots are torn, and thus establishment is retarded.

The Flower Garden.

CANTERBURY BELLS.

I have usually kept my Canterbury Bells in cold bed over winter, but is it necessary?—Can I not plant them out in September and protect with some leaves? Or had I better bed them like in a cold bed and put a frame around them and protect with boards to be removed except in freezing weather? Are they as hardy as pansies?

E. O. NATHURST.

Tennessee.

A good deal depends upon how low the temperature gets with you. The Canterbury Bell is a native of southern Europe, and while not needing complete protection from frost, is always injured by severe cold. They do not always stand outdoors, covered with leaves, as well as pansies, as, if the rains are frequent, or worse still, melted snows, the leaves mat down and smother them. A cold frame gives them the covering they prefer during average winters, as in mild days they can be aired.

You can plant them in permanent positions and put a frame around them as you suggest, but you gain but little. You would have to plant them about eighteen inches to two feet apart, while in snug winter quarters such as cold frames, you can plant six to eight inches apart. As the plants move most readily, but little time, if any, is lost in transplanting to blooming quarters.

While on the question of moving it is well to state that this plant, as well as the China Aster, can be moved even when in full bloom, without injury, by thoroughly soaking the soil around the plant and lifting with a ball. Shade for a few hours. Extra plants should be grown in

reserve grounds, set far apart to allow room for development. Those taking fine symmetrical forms can be taken up and potted for house decoration, and the balance used for cut flowers. If the faded flowers are cut the plant will continue blooming for a month.

The foxglove (*digitalis*) can also be moved as easily. Sow the seeds about July 1, or perhaps for your climate say June 15. Large plants, that is those sown in the spring, are not as easy to carry over winter. Should any plant not bloom the first season it is useless to carry it over the second winter.

have bloomed. Even though they wither after transplanting they retain growth enough to save the roots and the flowers will come up smiling the ensuing spring. I have had trilliums, lungwort, ox-eye daisy, wild ginger, goat's beard (from seed) and many others do nicely the second year after being taken up when in flower.

Moving quite young plants, or old plants when the soil can be retained on the roots, needs no special skill. It should hardly be necessary to say that a plant should never be pulled from the soil in transplanting as by doing so all the living

Now some of the scapes lack but a fraction of thirty inches high and nearly half an inch thick and have forty to fifty flowers each. A group of *Dodecatheon Jeffreyana* planted in the same border three or four years ago has made no progress and most of the plants are dead.

After the foliage of the dodecatheon has withered down, which it does early in summer, care should be taken not to disturb the roots as they are preparing growth for the next spring. It is well to have some late, light-growing annual to occupy the space and thus prevent an unseemly void in the border.

The trilliums are always much admired in cultivation because they come into bloom early when flowers are few. They recall to many a reminiscent picture of woodland glades and childhood's happy hours. *Trillium grandiflorum*, with great white flowers; *T. cernuum*, with smaller flowers modestly turned under the leaves; and *T. recurvatum* are the most available forms. They can be found in rich shady woods and may be taken up after flowering if you cannot find them earlier. Plant the thick root stocks where they are to grow, moderately deep; a little in the shade of trees or shrubbery will be best.

A shady situation will also do well for the bellwort (*Uvularia grandiflora*) which eventually produces a very pretty bunch of bronze green foliage festooned with graceful twisted, golden tassel-like flowers.

The dicentras are dainty little plants that should not be omitted from the hardy border. They have dissected leaves and two-spurred flowers like their more sturdy relative the "Bleeding Heart." The little tubers are larger than a pea. Take up whenever you find them and plant in the shade.

The button-like tubers of the "Spring Beauty" (*Claytonia virginica*) may be treated in the same way.

The wood-phlox (*Phlox divaricata*) has no superior for freedom of growth and blooming. It has two distinct forms of leaf. After blooming it develops stolons with broad thick leathery leaves almost like winter-green. These leaves are purple underneath and persistent during the winter. In the spring the flowering stems are produced from these stolons and have narrow downy leaves like many of the other phloxes, and the winter leaves disappear. This phlox spreads rapidly and can be transplanted easily at any time by shading from the light for a few days.

In sandy locations the sand-phlox (*Phlox bifida*) which is abundant on dry ridges along the lake shore does very nicely. It does not multiply.

The smooth lungwort (*Mertensia virginica*) is generally admired for its pretty bell-shaped flowers varying through all shades of lilac blue and purple according to the age of the flower. By many they are called "Bluebells." Here the lungwort seems to prefer bottom soil along streams and rivers; in the interior of this state it grows along the southern slope of bluffs. It can be transplanted after blooming and will make a good growth the next spring.

As I can not possibly name all the desirable plants, I will close this already too long list here. Some of these plants are rapidly disappearing and on the way to be obliterated from our flora as the march of progress year by year circumscribes the areas where they found the conditions needful for their existence.

Chicago.

J. HIGGINS.



WILD CRANESBILL (*Geranium maculatum*.)

WILD CRANESBILL. (*Geranium maculatum*.)

This fine plant has long been recognized as one of the best of the native flora. Wood says it is "a fine species worthy a place among the parlor 'geraniums.'"

In the woods it grows slender and straggling, but in cultivation it becomes a dense mound of foliage, as shown in the illustration, surmounted by many umbels of graceful pale purple flowers. This geranium is an early bloomer and hence all the more valuable in the hardy border. H.

CHOICE WILD FLOWERS.

As I judge that many of the readers of GARDENING belong to that intelligent class of plant-lovers who prize the modest beauties of the wildwood quite as much as the most pampered exotics, I will give a few suggestions in relation to the best method of obtaining some of our most desirable wild flowers direct from nature's conservatory.

Many of these plants can sometimes be ordered from dealers, but besides the diminished chance of growing after undergoing the perils and delays of a long shipment, you will always feel more interest in plants which you have, with your own hand, taken from their natural home.

The first problem for an amateur plant collector is how to recognize the plants before it is too late to transplant them safely. With many of the prettiest perennials it will do to take them after they

root fibers are injured. If plant roots must be freed from soil, as where they have to be sent by mail, it should be done with the greatest care to save the rootlets. It is well to roll each plant in damp paper, then pack closely in a light box. When these plants are received by the consignee they should be at once unpacked and, if not too tall, inverted in a shallow box or tray, then sift some fine black mold on the roots and wet thoroughly and let stand for sufficient time to allow the rootlets to take hold again on the soil. There are now (June 1st) in bloom in the hardy border in Lincoln Park, Chicago, two groups of hairy water-leaf which were received by mail, packed as described, a little over a month ago!

Among the plants native in this region, suitable for the garden border not one is more generally admired than the American cowslip, *Dodecatheon Meadia*, called also Shooting Star. It prefers moist meadows where its rich leaves and stately scape of beautiful cyclamen-like flowers always attract admiration. About a century ago, when it was first brought to England, plant-lovers pronounced it the most beautiful flower that had ever been brought from America.

There are now in bloom in the perennial border in Lincoln Park two groups of this plant (see illustration) which are of exceptional vigor and beauty. They are of the stock native in this locality. Two years ago this spring I got the plants on the prairie west of this city. This is their third flowering, growing larger each year.

AMERICAN COWSLIP: (*Dodecatheon Media*.)

PLANTS IN BLOOM JUNE 1.

The German irises are now at their best and what a show they do make in the garden. They are among the easiest plants to grow and are sure to bloom. We have them in great variety and are very fond of them. Coming as they do the latter part of May and lasting till about the end of June, they take the place of the spring flowering bulbs and help to keep the garden gay till the summer bedding plants are in flower. The oriental poppies are also at their best, their big glowing scarlet flowers making them quite conspicuous. We raised a lot of these from seed last summer and they are now fine big plants and flowering nicely. There is nothing in their season that attracts more attention in the garden than these big poppies, but they are of little use for cutting, unless they are cut before they are fully open and especially before the anthers burst. The variety Royal Scarlet has dark crimson flowers and is in every way a beautiful poppy.

The aquilegias are now in all their glory. A lot of seedlings in the reserve garden, from last summer's sowing, are now giving us flowers in abundance. Among the varieties were *chrysantha* and its variety *alba*. This is one of the most beautiful columbines we have, and its long clean flower stems and large yellow flowers make it very useful for cutting. *Alba* is of the purest white. They grow about two feet high. *A. vulgaris* and its variety *alba* are among the commonest of the columbines, but still they are beautiful and should be in every garden. The double form we do not like so well as the single. There are all colors among them. *A. Skinnerii* is not so showy as some of the others, the flowers being smaller. In color there are green and yellow; the spurs are about two inches long and are orange red. It comes in

flower a little later than the others. *A. cærulea* is flowering well. We raised this from seed also and every one came true; we do not have a poor flower in the whole lot, which is not often the case with this variety. *A. Jaetschani* resembles *A. Skinnerii* but grows a little taller. In *A. hybrida* we have all colors, some of them being very fine. The amateur who wants only a limited number of plants should sow a few seeds of these now; they will make fine flowering plants by next summer, and will last a long time in flower.

Another fine and showy plant in bloom is *Eremurus robustus*. This is said to grow nine to ten feet high, but with us it has never attained that size, the spikes on our plants being a little over six feet high. It proves quite hardy and begins to grow so early in spring that it is often injured by late frosts, but it is a plant that all lovers of odd and beautiful flowers should have; it is quite rare in this country, but can be had. The flowers are carried on a tall stem which should have a stake, to insure against being broken by the winds. They should be planted in early fall in a well drained situation and will well repay any extra care that may be given them.

Allium Moly has bright yellow flowers in umbels and is very showy when grown in a mass. It grows about a foot high and lasts for quite a while in flower. *Hemerocallis flava* (yellow day lily) is now in good flower. It is a showy border plant and has clusters of bright yellow fragrant flowers. *H. Dumortierii* is a dwarfier growing variety with yellow flowers, brown tinted on the outside. Both these plants are easy to grow and long lived, only requiring to be lifted and divided every three or four years; they like good soil to grow in.

Polemonium cæruleum and the variety *alba* are now in good flower. It has showy tufted foliage and terminal spikes

of deep blue flowers. The variety *alba* has pure white flowers. It grows about two feet high and makes a good border plant.

Veronica rupestris is a dwarf growing spreading plant, well suited for the edging of borders. It flowers very freely, in fact the plants when in flower are completely hidden by clouds of bright blue flowers. *V. amethystina* is the finest of the early flowering sorts. The plant is compact and is covered with spikes of bright blue flowers. A showy plant and will grow most anywhere.

Heuchera sanguinea is a showy free flowering plant, the flowers borne in long stemmed panicles and of the most intense scarlet. It is a fine plant to cut from and should be grown largely. *Lupinus polyphyllus*, blue and white, make a good showing, their towering spikes of blue pea-shaped flowers being very effective in the border. The variety *alba* is also extremely showy.

Dictamnus albus (Fraxinella) and its varieties are exceedingly fine border plants. The foliage is handsome and looks well the whole season. The long spikes of flowers last a long time in bloom. This plant should find a place in every herbaceous border. It is one of the easiest to grow.

Agrostemma flos-Jovis is a very free flowering plant with deep pink flowers that form quite a contrast with the silvery foliage. It grows about a foot high, and as a cut flower it is indispensable; it lasts a long time in flower. *Hesperis matronalis* is a vigorous growing plant forming a stout broad bush-like plant with showy terminal spikes of pink flowers, very free flowering and fine for cutting. *Lychnis flos-cuculi fl. pl.* is a very attractive free flowering plant with double white and pink flowers, is very useful for cutting, and lasts a long time in bloom. The variety *plenissima semper-*

florens looks something like the preceding; both are good and easy to grow.

Anthericum Liliago (St. Bernards' Lily) has showy spikes of pure white bell-shaped flowers, resembling a small lily. The foliage is grass-like, forming neat clumps. A choice plant for the border. *Lenaria dalmatica* is a plant that lasts for months in flower and is very handsome. The spikes of bright yellow flowers are very showy. It soon spreads into a big bush if left to itself and grows about four feet high. When in flower it looks something like our native snapdragon. *Lychnis alpina* is a good plant to cut from, its showy heads of bright rose-pink

nearly a month and they are still good. *C. venustus sanguineus* is a new variety and is a tall grower, the color light to dark red. *C. venustus roseus* was the earliest one to flower; this variety is highly colored and is very showy. *C. eldorado pictus* is one of the most beautiful we have still in flower, the color pure white with a red spot on yellow ground. *Brodiaea coccinea* has also done well in the frame. It grows about two feet high and bears fine heads of scarlet flowers tipped with green on a thin wiry stem and lasts for some time in perfection. *Freesia Leichtlini major* in the bulb frame is now in flower. It does not grow so

to form a mask planting for the foundation of the dwelling. While these plants were in flower the effect was immense, and the blooms proved attractive to the interesting hawk moths, but I would not again use the datura for the same purpose for three reasons: First the plant is too coarse and weedy for so prominent a position; second, the leaves and stems exhale the distinctly disagreeable odor of the wild stramonium when the dew begins to rise; third, its flowering season is too brief. But at the back of a border at some distance from the dwelling, yet where its architectural habit and great white flower trumpets can be seen to advantage, I would assuredly give it space for it is really fine in such a position, and its peculiarly handsome blossoms are useful in certain arrangements of cut flowers.

The subject of suitable material for amateurs' use in masking house foundations deserves consideration, as the appearance of very nearly every dwelling can be greatly improved by such plantings. The space filled with daturas as shown in the cut will this year be occupied by Madame Crozy cannas interspersed with scarlet zinnias and the whole faced with *Pennisetum longistylum* a tender ornamental grass that bears pretty, feathery heads. This combination is copied from some nice effects shown by Mr. Stromback on the upper terrace in front of the palm house at Lincoln Park, Chicago. Just under the windows of the bay, however, where the tall growing cannas might prove undesirable, miniature annual sunflowers will be massed as a background for the zinnias and pennisetum, thus giving variety yet limiting the coloring to red and yellow.

FANNY COPLEY SEAVEY.

Brighton, Ill.



SINGLE WHITE DATURAS.

flowers being very pretty. *Armeria cephalotes* and its variety *alba* have showy heads of flowers on long stems. A good edging plant for the border. Thyme is an old fashioned plant now a mass of flowers, and we are very fond of it. It should find a place in every garden.

Iris siberica is now in good flower. This forms a stout bushy clump and flowers very freely, the flowers being carried well above the foliage on long clean stems, which makes them very useful for cutting; the colors are mostly blue and white. The double herbaceous pæonias are now quite conspicuous, their big showy flowers making them favorites with all. *Salvia argentea* is now in flower. This is a beautiful border plant, its large showy hairy silvery foliage and tall spikes of white flowers making it very attractive.

Centaurea montana resembles the cornflowers but is of dwarfer growth, and is well worth growing. *Campanula rotundifolia* (Blue bells of Scotland) is a free flowering showy plant growing about a foot high. The foliage is narrow and the plant compact, the flowers blue and in clusters.

Lilium tenuifolium is our first lily to flower, and it is a little beauty. It grows twelve to eighteen inches high and has bright scarlet flowers on slender stems. If grown largely it would be fine for cutting. It will be another week or two before we have many lilies in flower.

In the bulb frame we now have a fine show of calochortus with beautiful markings. The varieties are not yet all in flower but some have been in bloom for

tall as when forced in the greenhouse, but we cannot say it has been a success, although it has grown well, scarcely a bulb rotting. They will not all flower as some of the bulbs were very small, but I think a success could be made of them, and the flowers last much longer than when grown in the greenhouse.

All the plants named have come into bloom since the 15th of May, but we still have many that have been giving us flowers for some time. Among these are the pansies, daisies, mulleins, forget-me-nots, perennial flax, *Viola cornuta* and many others.

Among shrubs in bloom we have *Spiræa Van Houttei*, *Viburnum plicatum* and *V. Lantana*, *Tamarix parviflora* and *Lonicera tartarica*, *Weigelia rosea* and variety *alba*, and *Deutzia gracilis* is a sheet of white.

Mahwah, N. J.

DAVID FRASER.

SINGLE WHITE DATURAS.

Few out-of-door plants are more effective than the single white datura, and perhaps no annual makes a greater show. Certainly a big, bold plant with seventy large and striking flowers open at one time, does seem large returns from one particularly husky and unpromising looking seed after only about four months' growth. Yet this is the record of the plant seen in the foreground in the accompanying illustration.

All of the plants shown are seedlings, from seed self sown the preceding fall. In early spring they were transplanted

COLUMBINES.

Aquilegias are almost indispensable in the garden and we can scarcely praise them too highly. They flower abundantly and for a long time, with only ordinary treatment, are extremely hardy and very useful for cutting, very elegant in habit and form and rich in color: all shades of lilac, blue and purple, white, rosy red and pale pink, copper and bronzy hues, yellow and scarlet are represented in the various species and varieties.

Probably *A. vulgaris*, the common columbine, is the best known in this large family and where nearly every color is represented, numerous hybrids with larger flowers, double and single, are classed among them, like *alba*, *alba plena*, *cœrulea plena*, *hybrida* and the dwarf section *A. v. hybridanana* in many colors; their height is only 10 to 12 inches, while the taller section grows as high as 1½ to 2½ feet. *A. sibirica*, *s. bicolor* and *s. flore pleno* are erect flowering, rather dwarf, generally less than one foot high, compact growing and free flowering plants, in shades of blue and lilac, sometimes combined with white.

A. alpina has very large flowers of a deep blue or blue and white with rather short spurs, is a very showy species, growing about 18 inches high. *A. olympica*, another large flowering kind, generally of a delicate blue shade with a white center, though some dark purples are among them; the spurs are short and stout and the foliage is glaucous; height 18 inches.

A. cœrulea, the Rocky Mountain columbine, sometimes called *A. macrantha*, is one of the loveliest large flowering species, sky blue and white in color with very

long and slender, spreading spurs, the flowers produced for a long period; it is one of the very earliest and continues until July; height from 10 to 15 inches. A stronger grower, somewhat taller, we have under the name of *A. c. hybrida*, the flowers of which are of the same shade but the stems are more branchy and consequently bear more flowers. *A. c. alba* or *grandiflora* is of the same size as the type and identical with it except in its pure white color.

A. Bertoloni nearly resembles the *cœrulea* in shape of flower, growth, height and habit, but has self colored flowers of lovely blue, probably a very little smaller than that species. *A. glandulosa*, another large flowering species with blue sepals shaded lilac and white petals, has spurs very short and thick; it grows only about 10 inches high and is surely one of the best. *A. formosa*, somewhat resembles our native *A. canadensis*, but is of taller growth and the bright red sepals are distinctly tipped with yellowish green, the inner petals pale yellow and the spurs straight and slender; it continues to bloom until September and grows 2 to 3 feet high. *A. canadensis* is scarlet shaded with yellow, and like *formosa* has slender long spurs; its height varies from 1 to 2½ feet, according to situation and condition of soil.

A. chrysantha, the tallest of all aquilegias, is pure light primrose yellow with very long and thin spreading spurs; the stems are many flowered and continue to send out flowers almost up to the middle of September. Occasionally we find plants that produce flowers of a deeper shade and there is a variety called *A. c. aurea*, or *flavescens*, which has bright canary yellow flowers, tinged with red, also a very pale, almost white, variety called *A. c. albescentis*; both are very desirable and pretty and all grow to about the same height, 3 to 4 feet. *A. Skinnerii* is another one of the yellow and



A DOUBLE-FLOWERED TRILLIUM.

would effectually cover and hide the ground beneath for the rest of the season and is not to be called unattractive, but a little more color would greatly assist general appearance in August or later.

Now a few words as to the propagation of the aquilegias may find a place here. They all bear seed very freely, but we seldom can obtain pure seed of any species with the exception perhaps of *A. vulgaris*. Usually several species are grown in proximity to each other, bees and other insects fertilize the flowers and the result is a general mixture of hybrids unless we take the precaution to exclude the insects by covering the flower stems with fine gauze before the flowers are ready to open. *A. canadensis*, *chrysantha*, *sibirica* and *vulgaris* come true from seed more frequently than the others, still there is always a few undesirable hybrids among the seedlings which have to be weeded out. To increase the stock of any of the other species and of the special varieties, division of the roots is the only reliable way, and this may be done just after the flowering season is past, or early in fall, so that the plants may have time to make a few new roots before hard frost sets in.

In the *vulgaris* section also there are many desirable varieties or colors, which we could not possibly expect to reproduce from seed, even with the muslin bag over the flowers, so we must rely on division in all such cases, but when only a general assortment of various colored *vulgaris* is wanted, seed sowing is usually satisfactory; we can then weed out the poorest among the lot the second year when they flower, and in this way may get a stock of fairly good varieties at a very small cost. In an attempt to reproduce the other species from seed we are most likely to find a great lot of rather undesirable hybrids, none of which bear any resemblance to the true type, and perhaps if we are lucky, a very slight sprinkling of the genuine article among them.

Rochester, N. Y. J. B. KELLER.

VAGARIES OF THE TRILLIUM.

We recently received photographs showing remarkable variations of the trillium which are illustrated herewith. The flower showing five parts was picked on May 10 at Cote des Neiges, Montreal, by Mr. James McKenna, and the double-flowered specimens were found by Mr. Roderic Cameron, Niagara Falls, Ontario. Mr. Cameron says the double flower is 3¼ inches across, pure white and has 21 petals and 3 sepals. He found it in Jubilee Park, and has named it the "Jubilee lily."

Commenting upon the cases above noted Mr. John Higgins, Chicago, writes: "The occurrence of deviations from the normal number of parts in the trillium is rare and such cases are interesting as the exception which is said to prove the rule. Doubling also happens in most kinds of flowers (I do not mean what gardeners call doubling, or becoming "full," but the coalescing of two ordinary flowers). Last winter there was in bloom in the palm house in Lincoln Park a plant of *Imantophyllum miniatum* bearing in one of the umbels a double flower made of two ordinary perianths grown together. The pedicel was flat. The other flowers were of the normal form.

"In a group of dodecatheons now in flower in the perennial border some of the plants have flowers with six or seven sepals and petals and one has a flower plainly twin as shown by two pistils on the united ovaries and a double number of sepals and petals. Plants in vigorous growth seem to produce double and abnormal flowers more frequently than plants of average strength.

"The 'monstrosum' strain of foxglove (*Digitalis purpurea*) of which a number of plants are now in bloom here, shows some very curious vagaries of form. The terminal flower is a large cup apparently made up of the upper five or six flowers of the spike grown into a single corolla; sometimes the point of union is marked on the exterior of the cup by small spurs."



A FIVE PART TRILLIUM.

red sorts, with long, slender spurs and large flowers, blooming until almost September, height about 2½ to 3 feet.

All these columbines are distinct and extremely prolific in flowering. A most unique color combination can be produced by planting the various complementary shades near each other, intermixed perhaps here and there with some later flowering tall subjects so as not to have the bed or plot in the border devoid of flowers after their season is past, though the luxuriant foliage of the aquilegias

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KEEP A STOCK of reserve plants in pots plunged in the ground in some out of the way spot, to replace gaps in the beds that may occur through accident or other causes.

THE BOSTON IVY made many friends under that name. At first the botanists called it *Ampelopsis Veitchi* and then *A. tricuspidata*, and now, as if in consideration of its changing nomenclature it is called *Vitis inconstans*.

IN THE last bulletin of the Hatch Experiment Station, the Loudon red raspberry is given first place for hardiness, vigor, quality, size, yield and firmness. The bulletin speaks very highly of this berry and announces that is the most promising variety in the station collection.

THE REPORT of the Government Pomologist for 1895 has just been issued by the Department of Agriculture at Washington. It contains descriptions of a large number of promising new fruits, and has colored plates of Ozone apple, Calvin pear, Rupp cherry, Miss Lola peach, Scribner plum, and Campbell Early grape.

A FAMILY who have generally spent their summers at eastern watering places took this season a furnished house in a country village. One of the children, a bright boy some eight years old, almost immediately after their arrival, after gazing admiringly at the trees and shrubs, exclaimed: "Mamma why do people live in cities when there are such things as these out here?"

KEEP your cosmos pinched back for a while. The dwarfier the plant the more easily it is managed later on. A very satisfactory way is to plant them in a slanting position and keep the main stem and longer branches pegged down. Allow a space four feet long by three wide for each plant. The smaller laterals will turn up, and when in bloom the effect is fine, and much less damage is done by heavy winds.

WATCH your rose buds for the green worm. Hand picking is the only effectual remedy. For all other pests, in outdoor cultivation, a thorough spraying overhead, sideways, and underneath with a hose, using a rain-maker nozzle under a strong pressure, seems to be the best course to follow. The spray is so fine that no damage is done to the plant, and the force is so great that the pests are forced off without ceremony. Mulch your beds with tobacco stems or with grass cut from the lawn.

A CORRESPONDENT of *The Garden* says: "It is strange how birds will sometimes for no apparent reason attack a tree that they have hitherto allowed to remain unmolested. Mr. Burrell's chimonanthus is a case in point, and here where the London sparrows abound the Japanese *Viburnum plicatum* has suffered greatly from their attacks. About the end of January they in a few days destroyed all the prominent buds so that we shall have very few flowers this year: I counted as many as 20 sparrows on a bush, all busy, and the ground beneath was strewn with fragments of the buds."

PROF. J. L. BUDD, of the Iowa State College, Ames, Iowa, is very much interested in the *Rosa rugosa* family, and is doing good work in hybridizing the Japanese form, the one most grown, with the Russian and North Central Asiatic types. He has about one hundred hybrids that have bloomed. Most of them are single, and in all shades of crimson and scarlet, and of all sizes of bloom up to four inches. Some are very double, the flowers ranging from 20 to over 100 petals. Mr. Jackson Dawson, of the Arnold Arboretum, is also doing good work with the *rugosa* roses. He has hybrids of it with General Jacqueminot, *Wichuriana* and others. The blood of this hardy rose (*Rosa rugosa*) thus being infused into that of our garden roses, will in time produce a race, of which Madame Georges Brunt and Emily Agnes Carmen, are the fore-runners, that will prove a great acquisition to those living in a climate where the winters are severe.

FOR LAWN SPRINKLING there is nothing better than what is known as "The Butterfly" costing less than fifty cents. There are two forms on the market, one in which the sprinkler is fastened on to an ordinary hose nozzle, which is not the one to get. The best one is that which will screw on to any section of a hose, taking the place of the ordinary nozzle. To use this sprinkler effectively, if residing in a sandy district where a rod can easily be driven into the ground, take a section of a gas pipe an inch and a half or two inches in diameter and seven feet long, forge a point at one end and at the other have two clamps made, into which the hose just below the sprinkler is forced. This clamp is shaped exactly like the figure of a "Lyre" in Webster's Dictionary, minus the strings. When the gas pipe is driven into the ground, the hose is carried up parallel to the rod and pressed in between the clamps. These clamps should be just far enough apart to allow the hose to be

pressed in between them. Being wider at the back the swelling of the hose under water-pressure holds it in place. This elevates the sprinkler five or more feet, enabling it to cover quite a space. Lincoln Park gardeners use this method in preference to all others. Where the ground is clayey and hard, have your blacksmith make a tripod, say four to five feet high, with a short rod running up above the neck, or place where the three feet meet, and on this rod place the clamps. This tripod can be made to fold up. One leg is carried up, the top forming the rod to carry the clamps. The other two legs are riveted on to the main one in such a manner that they will swing in and out. For one not to fold, take a piece of piping, say three inches in diameter and four inches long. Cut this half through at the middle and then straight down to one end. This makes a complete band of iron two inches wide, one half of the band being four inches wide or high. It is like taking a barrel and sawing it half through at the middle and throwing the upper half of the sawed staves away. The clamps are attached to the outside of the wider part of the band, and the legs riveted to the narrower part. In the folding tripod, be sure that that part to which the clamps are attached stands perpendicular, as the sprinkler should stand up straight.

JAPANESE FLORAL ART.

The Japanese are, as a class, probably the greatest lovers of flowers of any known nationality. This is shown in their national customs, creating holidays devoted entirely to viewing and admiring the common flowers of certain seasons. The country is particularly noted for its flowering trees and shrubs and all important cities have groves devoted to them, that their people may enjoy their beauties. Flower viewing excursions are in order at each recurring season and singularly enough their enthusiasm is carried so far that "Snow Viewing" is included as one of their "flower festivals." A snow-clad landscape is considered as a winter floral display.

In the spring come the plum and cherries (the latter producing no edible fruit), in the summer the wistaria, pæonies, lotus and irises, and in the autumn the chrysanthemum and "the seven plants of autumn," which are: The lespedeza, the morning glory, the *Eulalia japonica*, the *Valeriana villosa*, the *Valeriana officinalis*, the *Pueraria Thunbergiana* and the carnation.

They claim to have 269 color varieties of the chrysanthemum, and fancy that the same tint is never exactly reproduced, resembling in this feature the endless varieties of the human countenance.

The arrangement of flowers for interior decoration is restricted by many rules. Those that possess any poisonous characteristics in leaf, stem or root, are considered ominous, and to be avoided. Those having a strong odor are not considered suitable to be placed before guests. What are termed "passed" flowers, i. e., those belonging to last month, are forbidden.

There are rules covering "combinations." For instance the combining of the pine and the *Rosa indica*, and the willow and the narcissus is allowed, but the oak and the aster, and the peach and the cherry, is prohibited.

In all their landscape work the idea of sex is attributed to the material employed. They have male and female cascades, male and female plants and trees, and

male and female rocks and stones. The main torrent of a waterfall is masculine, the lower one feminine. The application of sex to stones is only used when placed in pairs, when the one possessing the more vigorous outlines will be considered masculine, the other feminine. Where a flowering tree is used in decoration with a plant, the tree is the male and the plant the female. With flowers proper the buds are feminine and the full flowers masculine, while overblown flowers again are considered feminine. Red, purple, pink and variegated colors are male, and blue, yellow and white, female. The front surface of a leaf is male and the under surface female. This same principle is applied to the direction of the stems in the composition of a bouquet, the right hand side and the front being male and the left hand and further side, female.

There is also a color rank among the flowers. Generally a white flower of any species takes highest rank. In chrysanthemums the yellow takes precedence; in peach blossoms, the pale pink; in the iris, the purple; in camellias, red; wistar as, lavender; pæonies, red, etc.

There are seven or more different schools or styles of flower arrangements, although one main principle governs them all.

ROBERT DOUGLAS.

All lovers of the evergreens will regret to hear of the death of the veteran nurseryman Robert Douglas at his home in Waukegan, Ill., on June 1. He was the pioneer of western nurserymen and one of the first to raise evergreens successfully from seed. To his efforts are we indebted for the beautiful Colorado blue spruce, Douglas' golden arbor-vitæ, Douglas' pyramidal arbor-vitæ and the charming golden spreading juniper. He was a lover of nature and her most ardent student. On the hints she gave him he based his practice, and thus was successful.

He loved the woods and the open air and his cheery ruddy face gave full evidence of an outdoor life. His liking for the freedom of a natural mode of life, untrammelled by conventionalities, was well illustrated during a visit to the writer last summer. He had been entertained by being taken to all the attractive places in the neighborhood, one of which contained a handsome Grecian loggia overlooking the lake. This was glisteningly painted in steamer white and was faultless in its immaculateness. He merely remarked to the owner that the view was fine. Later in the day he came to a rustic arbor almost hidden in a grove of trees. Leaning back in the seat and stretching out his legs along the dirt floor, he exclaimed, "This is fine! Don't you know I like this better than that painted thing I felt in it as if I ought to have had my boots blacked." That remark was not because he was slovenly in his habits, for he was not, but was his way of expressing his love for the perfect freedom his out door life had engendered.

The trees of the woods and gardens were his children. He knew them all and loved them all. When taking him to the depot at the close of the day of his visit he suddenly turned round and said "I have enjoyed this day so much"—then pausing a moment as if dating back his thoughts, he added, "Oh! how I have suffered sometimes for some one to talk trees to!"

Settling in Waukegan in 1844 he at once embarked in the nursery business continuing it until the present time. While seated in his office writing letters

death came silently and beckoned him away. Mr. Douglas was in his eighty-fifth year. W. C. EGAN.

The Greenhouse.

A VARIED COLLECTION.

From E. O. N., Tennessee, comes the query: "Please let me know the proper treatment of below plants in summer. They are now in my greenhouse. Shall I plant them out or plunge the pots outside? How about exposure to sun, and watering?"

Several of the plants named in the list are strangers to me. Of those I do know, the following treatment will be found all right.

LANTANA.—This in its native clime is an evergreen shrub. With us it is a greenhouse plant and a very desirable summer plant for the mixed border. You can plant them out, or if you wish to save the old plants, pot into a liberal size pot and plunge out of doors in the broad sun. It propagates from the young tender growths.

CASSIA FLORIBUNDA.—Plant out in open ground. It is a tropical plant and would thrive best in a sunny but sheltered place.

PLUMBAGO, red white and blue.—These can be kept in the greenhouse all summer and shaded, but what is better, plunge the pots out of doors during June, July and August.

MYRTLE (*Myrtus communis*).—This handsome shrub is hardy in the south of Europe but far from it here or in Tennessee. Plunge out of doors, or it can be planted out and lifted, and don't be afraid to pinch or prune into desired shape. Full sunlight will suit it.

CEREUS.—Plant in the most sunny place; they will lift easily.

PHYLLOCACTUS.—Plant out; any cactus will lift readily. A rather sandy soil or light loam is best.

JUSTICEA.—Plant out and lift in fall. This plant is scarcely worth room in a greenhouse, but is easily propagated from growth in the spring.

SOLANUM JASMINOIDES GRANDIFLORUM, *S. j. Rantonettii* and *S. azureum*.—As there is said to be 900 species in this genus it is impossible to know all of them or one quarter of them. We all know *Solanum tuberosum*, and many florists know *S. jasminoides grandiflorum*. Plant out in a warm sunny spot. You can lift in the fall by cutting back hard, or you can put in cuttings late in the fall which root readily from most of the evergreen solanums. WM. SCOTT.

SPIRÆAS AND RASPBERRIES.

The following comes from "T. T.": "What are the best three or four varieties of spiræas for forcing by an amateur? How early can they be successfully brought into heat? Will they force the second season and are the roots hardy?"

"What causes the new growth canes of my black cap raspberries to suddenly wilt and die when 6 to 18 inches high? Many canes have acted this way with me for past three seasons."

More than likely "T. T." refers to the herbaceous spiræas and particularly to that well known and useful plant widely known as *Spiræa japonica*, the correct name of which is *Astilbe japonica*, there is a botanical difference between it and the true spiræas.

Astilbe Thunbergii, classed as a sub-shrub, forces finely and is used very largely for that purpose in Europe. If space were of no account and variety was, many of the shrubby spiræas make a handsome decoration for the conservatory; *Bumalda* and *prunifolia* are especially good for this purpose. Of the herbaceous spiræas for forcing the best are *palmata*, of which there is red, white and rose; *venusta*, pink; *astilboides*, white; and *aruncus*, white. Besides the popular forcing *Astilbe japonica* there is its varieties with the variegated foliage and a good variety called *compacta*, with which I am much pleased this spring although it wants about three weeks more time in the greenhouse than the old *japonica*.

The time that the herbaceous spiræas will require to bring them in flower will of course depend on the heat you give them, and they are better brought along slowly at first; from ten to twelve weeks will be about right for the winter months. Like all plants that are used for forcing, as their natural time of flowering approaches the less time need they be in the greenhouse.

The shrubby spiræas are among our hardiest shrubs and the herbaceous species, as well as the astilbes, are as hardy as a pie plant. If not too severely forced, and allowed to properly ripen their foliage after flowering, they can be forced year after year, as I have seen them treated 40 years ago, but for the commercial man it pays at the very low cost of the roots to buy every year.

WM. SCOTT.

[The question about raspberries can not be intelligently answered without a specimen of the affected canes.]

PROPAGATION OF GASTERIA AND HAWORTHIA.

I have a gasteria, variety unknown, but it is the one with the white bosses on the leaves. About three months since I found a broken-off leaf lying on the surface of the pot with what looked like a root projecting from it; I potted it off, and it remains in just the condition now that it was in when potted, neither advanced nor receded. Does this plant emit roots from severed ends of leaves?

And how is haworthia propagated? I have not been able to strike its leaves, the stems seem too large for cuttings, and it never seeds. It is so much superior to gasteria as an ornament that I wish I could propagate it. W. W.

Oakmont, Pa.

The gasteria described is no doubt *maculata*. If the severed leaf had been broken off near the stem, possibly it would have thrown out roots. If propagation is desired remove the centre of the plant, which can be rooted, and side shoots will be thrown out which will root readily.

Haworthia is increased by suckers, which in a good sized plant are frequently produced. WM. SCOTT.

Roses.

ROSES.

The roses are now beginning to flower, but it will be a week before there is much of a show. The first one to flower was the Dawson rose. This is a vigorous growing rose, producing showy panicles of semi-double, deep pink, fragrant flow-

ers. It is very free-flowering and in every way a fine rose. All the different classes came through the winter in fine condition and at present the roses never looked better; they give promise of a wealth of bloom. The insects have not troubled them much as yet; we have had cold nights of late, and plenty of rain, and this no doubt has helped to keep them clean, but we go over them about twice a week and give them a dose of whale oil soap solution with a little fir tree oil and kerosene mixed in it; this seems to keep them in check but it has to be begun early and kept up all through June.

That fine new rose, Crimson Rambler, has proved perfectly hardy, not a twig being injured, although it was left uncovered all winter. Without doubt this is the finest and cleanest climbing rose there is. If the white and yellow rambles prove as great acquisitions as the crimson one, they will be a welcome addition to the list of hardy climbing roses. The new H. P. rose, Marchioness of Londonderry, has proved quite hardy both on own roots and budded. It seems to be a strong grower, the foliage large and dark green. We saw some flowers of it last year, and we thought it was the finest white rose we had ever seen. Another new white rose that has come through all right is Margaret Dickson. This is a beautiful rose, and it seems by the many flower buds on our small plants that it is very free flowering.

The rugosa roses are now in fine flower. Most of them are single, although there is a few semi-double ones amongst them. These are highly ornamental on account of their good habit and beautiful foliage, and are seen at their best when grown in a large clump. DAVID FRASER.

Mahwah, N. J.

ROSE COUNTESS MARNIESSE.

About this rose I agree with Mr. Conover, it cannot be praised too highly. It is much more (down here at least) than you claim for it. It is a mass of blooms (in clusters) from earliest to latest. It ranges from five feet up in height. I have had the rose 45 years, but it is very little sold now. Its greatest drawback is that it is not new. WEST TENNESSEE.

GLOIRE DE DIJON ROSE.

In GARDENING for May 15 Mr. Conover speaks of this rose. In answer to his inquiry would say, bud it, certainly. It is feeble on its own roots. Budding gives vigor, strength and endurance.

WEST TENNESSEE

Mushrooms.

GROWING MUSHROOMS IN COW MANURE.

A great deal has been said and written about what sort of manure mushrooms should be grown in, and having tried several experiments the past winter with different manures I have come to the conclusion that mushrooms will grow in most any kind of manure providing the heat and moisture is in it. My last bed was composed of cow manure alone using no horse manure in it at all, and a finer bed of mushrooms I never saw. It has

[CONCLUDED PAGE 302.]

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150 Purple Birch, 10 to 12 ft., 1¼ to 2½ in. caliper.
200 Golden Catalpa, 12 to 16 ft., 1½ to 3½ in. caliper.
1200 Western Catalpa, 10 to 14 ft., 1½ to 2½ in. caliper.
75 Weeping Beech, 8 to 12 ft., 2 inches caliper.
500 Purple Beech, 8 to 12 ft., 1½ to 2 in. caliper.
1000 Oriental Plane, 12 to 15 ft., 1¼ to 2½ in. caliper.
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now been in bearing for over a month and the mushrooms are the largest I have ever seen, many of them weighing over six ounces, and this after the stems were cut off.

The beds were prepared in a very simple way, the manure having no preparation. Long strawy manure was used to put in the bottom of the bed, just as it was taken from under the cow barn; it was very hot but none of it burned. Nine inches of this was used, tramping it well down. On the top of this three inches of decayed cow manure was placed; this had very little heat in it but the bottom part being so warm we knew it would be all right. Three days after the bed was put in the temperature of the bed had gone up to 117°; thirteen days after the bed had been put in the temperature had declined to 93°. It was then spawned and eight days later soiled over in the ordinary way. The manure consisted of chopped corn stalks, shavings and straw; these corn stalks having lasting heating qualities; this was quite noticeable where they were used in the making of hot beds and banking around the cold frames. I also notice that beds cased partly with dry cow manure last much longer in bearing than beds cased with soil alone. A bed that was put in last September in this way is still giving quite a few mushrooms, and promises to do so for some time to come.

Many people ask us how to grow mushrooms, thinking there is a great art in it, but this is not so; they are as easy to grow as a head of cauliflower in the garden, if you have the material and this in proper condition. We were a little particular about the first beds we put in it taking us over a month to get the manure ready; we went to the stable every morning, got all the pure horse manure, shaking out all the straw and turning over the heap twice a day. But that is a thing of the past. Our present bed was all prepared and made up in half a day, and is giving better returns. We will give the cow manure a more extended trial when we start our beds in September again. After having kept careful notes of my beds for the past two years, the make up and care of them I have found the following to be the best way to make up a bed. Ten inches of hot wet strawy manure in bottom, three to four inches of more decayed manure that has had some soil put in it, say one part to five, well mixed up together, and the whole well beaten in. Spawn when the temperature of the bed is at 95°, case eight days later with two inches of soil to which has been added one part of dry cow manure. Cover up bed with straw. If it should get dry give a good watering, not a sprinkle but a watering. At this season of the year I do not see that it makes any difference whether it is cold or water that has the chill taken off. I use cold but in winter I use water at the temperature of about 95°. Preparing beds in this way I have yet to record a failure. DAVID FRASER.

Mahwah, N. J.

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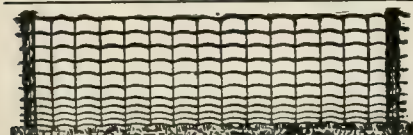
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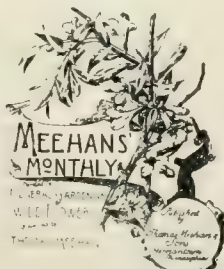
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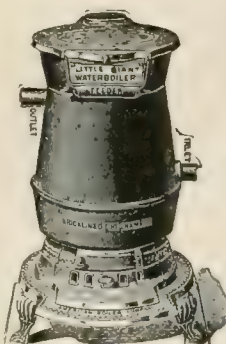
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A BED OF BOURBON AND BENGAL ROSES AT THE MISSOURI BOTANICAL GARDEN, ST. LOUIS.

Roses.

BOURBON AND BENGAL ROSES.

In St. Louis the three roses comprising the bed seen in the engraving can be relied on to furnish an abundance of bloom from June till frost. The photograph, showing a bed in the Missouri Botanical Garden, was taken the first week in October. They are the Bourbon rose *Hermosa* (rose pink), and the Bengal roses *Agrippina* (crimson) and *Cels Multiflora* (flesh color).

All of these are old sorts, long in cultivation, and the last named is now seldom catalogued, but it is an excellent variety to complete a trio of ever blooming roses of like habit, adding a distinct color. Indeed, the only rose I know that would take its place in such a combination is the charming polyantha, *Clothilde Soupert*.

The three mentioned are found perfectly hardy at the Missouri Botanical Garden, St. Louis, (where they have for years furnished the bulk of summer roses) with a winter protection of six inches of pine needles put on in fall or early winter after the ground is frozen.

FANNY COPLEY SEAVEY.

THREE RECENTLY INTRODUCED GOOD GARDEN ROSES.

Among the new hybrid perpetuals are three that seem as easily managed as the old timer *Gen'l Jacqueminot*.

Captain Hayward, sent out in 1894 by Bennett Bros., is a vigorous grower and a free bloomer. Flowers a brilliant crimson, not quite as dark as *Gen'l Jacqueminot* but about the same size. It is one that does well pegged down.

La Rosiere, although sent out in 1874, has not been grown much in the west and therefore may be classed as new. It is not as strong a grower as Capt. Hayward

but is of excellent habit and a free bloomer. Its flowers are of a very dark crimson, full and of fair size.

In 1894 Messrs Alex. Dickson & Sons, of Ireland, introduced Mrs. R. G. Sharman Crawford, a splendid companion to the above. It is a moderate grower, extremely fine in bud, the blooms being a deep rose. Any one desiring additions to their collections, not having this trio, will make no mistake in including them.

W. C. E.

GLOIRE DE DIJON ROSE.

While making no objection to the advice of "West Tennessee" to Mr. Conover to try a budded *Gloire de Dijon* rose, I must protest against his terming it "feeble on its own roots." Here with us it is anything but feeble, compared with other sorts common here. Perhaps the climate of West Tennessee permits of the growing of sorts of much stronger growth than we are accustomed to see here. But we

won't have it that the good old hardy Dijon is a feeble grower.

Philadelphia. JOSEPH MEEHAN.

ROSA LUCIDA ALBA.

Rosa lucida is the well-known dwarf wild rose. The rare and beautiful white form, the flower of which we now illustrate, was found more than thirty years ago at Cherryfield, Me. There was but a single plant, which the finder transferred to his garden in the vicinity, where it

bine (*Lonicera periclymenum*) when he says
Through the sweet briar or the vine,
Or the twisted Eglantine.

But Herrick undoubtedly refers to it in the following lines:

From this bleeding hand of mine,
Take this sprig of Eglantine,
Which, though sweet unto your smell,
Yet the fretful briar will tell,
He who plucks the sweets shall prove
Many thorns to be in love.

Singularly enough this shrub is one of many from which it was supposed that the sacred crown of thorns was made.

peculiar metallic lustre." Now that single roses are justly claiming attention these hybrids are a great acquisition.

W. C. EGAN.

ROSA SPINOSISSIMA ALTAICA.

(Syn. *R. grandiflora*).

This gem among the early blooming single roses seems quite rare in gardens, although known to cultivation since it was introduced from Siberia in 1818. It received its last name from the Altai Mountains. It is quite hardy, rather dwarf in growth, but dense in its foliage. Its large single white flowers are a welcome sight so early in the season. This rose must not be confounded with a rose catalogued in England as *Rosa grandiflora*, which is a form of *R. multiflora*, much less hardy and valuable. The illustration is from a specimen in bloom June 1, at the Arnold Arboretum, Boston.

A PLEA FOR GARDEN ROSES.

BY P. O'MARA.

[Read before the Dutchess County Horticultural Society at Annandale, N. Y., June 16.]

The Dutchess County Horticultural Society meets here to-day and has honored me by putting me forward at this, the tenth hour as it may be called, to make a plea for garden roses. It is devoutly wished that some one more capable had been assigned to the task, that even some other title was selected, for in the presence as it were, of the queen herself, what plea is necessary? She is enthroned here in regal beauty, with fragrant lips wide open bidding gracious welcome to her devotees, with smiles for all and frowns for none. Here she sits enthroned in all her glorious raiment of velvet incarnadine, the satin sheen of pink, the gold of Ophir, the bridal white; dyes gathered from Ind, from Gaul, from Merrie England, from the Emerald Isle, from sunny Italy from the Balkan slopes, from the plains of Damascus, from China, from Japan, from our own boundless prairies, from the Rhone, the Rhine and the Danube, aye even from the Garden of Eden. The suns of centuries have purified them, have distilled the matchless perfumes, man's best efforts have been put forth to aid nature, who was already prodigal in her gifts, and hence instead of making a plea for her it would perhaps be more appropriate to sing a hymn of praise, of love, of loyalty to our Sovereign Queen, the Rose. Mr. Hemans in her beautiful verse "A Thought of the Rose" has fittingly and delightfully epitomized all that might be said of fact and fancy in relation to Her:

How much of memory dwells within thy bloom,
Rose! ever wearing beauty for thy dower!
The bridal day, the festival, the tomb—
Thou hast thy part in each, thou starest flower;
Therefore with thy soft breath come floating by
A thousand images of love and grief
Dreams, filled with tokens of mortality;
Deep thoughts of all things beautiful and brief,
Not such thy spells as those that hurried thee first,
In the clear light of Eden's golden day.
There thy rich leaves to crimson glory burst,
Linked with no dire remembrance of decay.
Rose! for the banquet gathered, and the bier
Rose! colored how by human hope or pain;
Surely when death is not, nor change, nor fear,
Yet may we meet thee, joy's own flower again.

He must be bold indeed who would make a plea for roses, for of all subjects in horticulture none have been so widely written about as this and every phase of it has been touched upon. It is of garden roses, however, of which we speak. There is little need to make a plea for winter roses for the commercial spirit will take care of them. The poetry that attaches to:

The last rose of summer left blooming alone,
All its lovely companions are faded and gone,
Does not attach to them, for they are



ROSA LUCIDA ALBA.

grew vigorously and from which it was more or less disseminated in the immediate neighborhood. As far as known the only plants now in existence are one at Miss Ellen Holway's, Machias, Me., three at W. H. Cowing's, West Roxbury, Mass., and a batch of little cuttings and grafts in the possession of Jackson Dawson at the Arnold Arboretum, Boston.

SWEET BRIARS.

This shrub is justly so common and so generally known under the name above given that but few know its botanical identity, *Rosa rubiginosa*, the specific name meaning rusty-leaved. It is a native of Europe (Britain) but in some places in the United States it has escaped cultivation and become naturalized. At an early date it was known as *Rosa eglanteria*. It bore this name in Shakespeare's time, which the common tongue had changed to eglantine. In *Midsummer Nights Dream* we find:

I know a bank where the wild thyme blows
Where oxlips and the nodding violet grows;
Quite over-canopied with luscious woodbine,
With sweet musk roses and with Eglantine.

And again in *Cymbeline*:

The leaf of Eglantine, whom not to slander, out
sweetened not thy breath.

We must not, however, confound Shakespeare's eglantine with Milton's, who undoubtedly referred to the English wood-

Sir John Mandeville writes: "And afterwards he was led into a garden of cayphas and there he was crowned with Eglantine." Gerard refers to the hews being used as a preserve in these quaint words:

The fruit when it is ripe maketh most pleasant meats and banquetting dishes, as tarts and such like, the making whereof I commit to the cunning cook, and teeth to eat them in the rich man's mouth.

The sweet briar has been long in cultivation and has decorated many a happy home. It is a shrub that will always remain in the affection of the people, and hold its own among the various newcomers in the ranks of climbing roses. However, this is an age of improvement and we cannot shut our eyes to the many debutants claiming our admiration.

A few years ago Lord Penzance, in England, experimented in hybridizing the sweet briar with various other roses such as the Austrian briar, varieties of *gallica*, etc., and has produced a most remarkable race, perfectly hardy and as strong growing as their parent. Most of them not only possess in their foliage the delightful scent so well known and prized in the eglantine and their habit of berrying profusely, but are decided improvements in the color and size of flower. They vary from deep rose to dark crimson, from white to blush rose, and include a "beautiful soft tint of copper with a



ROSA SPINOSISSIMA ALTAICA.

gathered and sent into market, or to the town house for ball or festival.

SOIL AND LOCATION.

There is so much to be said on the subject that it is difficult to decide where to begin. It is an axiom, however, that poor soil will not produce good roses. The most fertile spot in the garden should be selected for the rose beds, and be sure that they are not close to trees, as they not only rob them of the needed sunlight, but are a continual drain upon the soil. A belt of evergreen trees on the north side of the garden, a house, or anything which protects from bleak winds is of the greatest benefit. The finest rose garden which I have as yet seen, viz.: that of the Hon. Jos. S. Fay, at Wood's Holl, Mass., is protected on all sides by trees and buildings; the soil is a rich deep loam, and the result is shown each year in the number of prizes carried away at the Boston rose show. Due credit should be given, however, to the gardener in charge for his skill and care. Above all things, be sure that the soil is well drained; a cold, wet soil is a sure invitation to every form of disease to which the rose is heir.

It may seem tiresome to go over the dry details of planting, but these must be attended to very carefully; no amount of care bestowed afterwards will make amends for slipshod work at the start. The soil should be dug to the depth of at least one foot, or better still, if the top soil is of a sufficient depth, it could be trenched; if, however, the top soil is only a foot deep and the sub-soil is clayey, it is better to dig it only to the depth of a spade. A coating of three inches of well rotted cow manure should be dug in and thoroughly incorporated with the soil, and a sprinkling of pure bone meal is a very valuable adjunct. It is well to bear in mind in forming the bed that it should not be too wide, it should be of such a width that it can be cultivated and the

flowers gathered without tramping on it continually.

TIME FOR PLANTING.

There is a proper way to do most things and next in importance is the proper time, in fact they go hand in hand. In a country as large as ours it is of course out of the question to name one time for planting suitable for the varying conditions of climate. The best time, if dormant roses are to be planted, is when the ground is free from frost in the spring, and it is dry enough to cultivate. Roses are late ripening in the fall and it is questionable if it is wise to plant immature plants. Pot-grown plants that have had a rest during winter are unquestionably the best to set out, as they are in condition to take root in the soil and grow without check after being planted; these need not be set out until about May 1. The method of planting varies with the stock to be planted. If budded or grafted roses, they should be planted so that the junction of the stock and cion is say two to three inches below the surface of the soil, the object being to prevent, as far as possible, the growth of the stock to the detriment of the rose which has been budded on it. Planted in this way, roots will be emitted from the rose where it has been budded, and as the stock buds eventually die, the plant lives in addition on its own roots and no further trouble from "suckers" will be had. If the stock grows its shoots should be pulled off as soon as they first appear, and the appearance of the briar upon which roses are budded or grafted is so different from the rose itself that there is no trouble in distinguishing them apart. The roots should be spread out and some fine soil put into the hole over them, firming it well, then adding more, and so on until the hole is filled level with the surrounding surface; do not heap it in carelessly and then firm it, as the chances are that it will be loose at

root, where above all it should be firm. After planting is completed give each plant a good watering and it is better to leave a saucer-like depression around each plant so that the water will descend to the very centre of the plant.

If many plants are to be set out, be sure that the roots are not left exposed to the sun while waiting to be planted, a very short exposure will rob them of much vitality. Keep them covered with a bag that is saturated with water, and it is good practice to dip the roots in a tub of prepared puddle before taking them out to be planted. What is said here about roots, watering and planting, applies to dormant roses on their own roots, as well as budded or grafted ones, in fact, it applies with even greater force. If the plants are pot-grown, rub off the "shoulder" of the ball of soil, tap it gently with the knuckles, or a light stick, to loosen it slightly and then insert it in the ground a little deeper than it was in the pot, firming the soil well around it afterwards and water after being planted.

PRUNING.

An important operation connected with planting is pruning, which is better done immediately after being planted. A pruning shears is best for this purpose, as if a knife is used the plant is likely to be loosened in the soil. Only general instructions on this all-important operation can be given. Right here it is well to say that if any of the roots are bruised they should be cut away to the sound part, and if any are of immoderate length they should be shortened back before planting. The strength of a shoot will determine how far it should be cut back; if very strong, cut it back to four or five eyes from the main stem, if weak to the second or third eye, and let the topmost eye be on the outside of the shoot wherever possible. If the branches are crowded and the shape of the plant necessitates it, drive in a sharp-pointed stake—not too large—and spread them by tying, or cut enough away to ensure against overcrowding as they grow. Those directions apply mainly to hybrid perpetual roses, the tea or monthly roses only require a shortening back of the main shoots, severe in the case of soft, immature wood, and less so on well ripened shoots, and the cutting completely away of all light spray wood, which will only produce foliage and no flowers. When the plants bloom and the flowers are cut off, either for use or after they fade, it is better to cut back to the second eye as they are more apt to flower again than if a greater portion of the flowering shoot was allowed to remain on the plant.

The distance at which to plant varies somewhat according to the class and variety; but as a general rule it is safe to say that the hybrid perpetuals may be planted eighteen to twenty inches apart, hybrid teas fourteen to sixteen inches and the tea or monthly roses twelve inches. The climbing roses if planted on a trellis or fence should be planted about six feet apart.

OWN ROOT AND BUDDED ROSES.

The much mooted question of the relative value of roses on their own roots and budded roses, I would answer by saying: whenever you can get roses on their own roots take them in preference to the others. Some sorts, however, can hardly be had on their own roots, such as the Baroness Rothschild type and the Persian Yellow. Some of the hybrid teas do better on briar stock, but all the tea or monthly roses do well on their own roots and can be obtained easily in this

country grown in that manner. Many people prefer budded roses because quicker results can be obtained and where the grower keeps a careful watch for "suckers" they are just as good, assuming that they are budded low and properly planted; but too many of the cheap roses vended by itinerant dealers, auctioneers and the large department stores are the work of cheap labor, budded high on stocks that have never been disbudded and are a very poor investment for the planter. Better buy from some reliable grower who knows what a good plant is and has a reputation as a grower to lose. If your watch wants mending, you don't take it to the blacksmith.

But pot-grown plants, although costing more at first, are cheaper in the end, for the reason that not one in a hundred will die if properly planted, while there is always a percentage of loss under the most careful planting with dormant roses. The loss is always greater where experience is lacking and therefore the beginner should always get pot-grown plants. It is only about two weeks ago that an acquaintance living near me asked me to stop and see his roses. He looked ruefully at them and asked me when they were going to start. I replied: "Probably when the Keeley Motor or a successful air ship does." They were as dead as Julius Caesar and were probably dead when he bought them at a bargain from a street merchant. "Beware of a great pennyworth."

If bloom is desired the first year,—and it is usually desired the first minute and every minute thereafter—two year-old plants of the hybrid perpetual and hybrid tea and climbing roses should alone be planted. Young plants of these classes make good blooming plants the second year, but will not bloom the first. Even in the tea, or monthly section, it will pay to get two-year-old plants as bloom will be obtained sooner and in greater quantities. But even the smallest plants in this section will bloom the first year. Plants from 3 inch pots, rooted early the preceding fall and kept at a low temperature during the winter, will give splendid results; but beware of the long, slender one-stem plants that have been forced to get length at the expense of vitality.

GARDEN CULTURE.

When the roses are planted then it will not do to fold your arms and let nature do the rest. She will do it to be sure by sending up weeds and sending also various animals—called bugs, for brevity's sake—to partake of the feast you have so carefully prepared for them. These uninvited guests must be ejected and some means will be suggested later on. The insects and diseases which attack the rose (and other plants as well) are usually the effect of a condition and not the cause; troubles of this kind rarely attack healthy and vigorous plants. It is the weakened, sickly plants which are the victims. The best remedy, then, is prevention. Keep your plants in good health by a little care and attention, and there will be little trouble from these pests. Ultimate success depends in a great measure on the care given to the plants after planting. The soil should be stirred frequently with a fork, hoe, or hand cultivator, so as to keep it mellow, as well as to keep down weeds. This is particularly necessary during dry weather, as ground which is frequently cultivated will be found to retain moisture far better than if it be allowed to become baked into a hard crust; in addition to this it induces a development of young roots close to the

surface. Care must be taken, however, not to hoe too deeply so as to injure the young roots. Another important point is to cut off all the flowers which are past their prime, as not only are they unsightly, but they tend to weaken the plant by forming seed pods; by removing them the strength which would otherwise be wasted, goes to form new growths, thus increasing the number of blooms. If a good sprinkling of bone meal is worked into the soil about the middle of June, it will prove of great benefit.

PROTECTING TEA ROSES.

The tea or monthly roses are not entirely hardy, where the thermometer falls twenty-five degrees below the freezing point, so that protection is absolutely necessary. The best way to do this is to throw up the earth around the plants, a foot or so, and cover it with well rotted stable manure, then bend the branches down and fasten them securely within three inches of the ground, tying them to stakes driven in for that purpose, or tying them to each other if feasible. Then spread dry leaves or rough litter over them to a depth of say six inches. This should not be done, however, until severe cold weather sets in, so that the foliage is off the plants and they are thoroughly ripened, which is usually about December 1st in this latitude. This covering should not be taken off until all danger of severe frost is over, say about April 1 in this section. As soon as the ground is free from frost and it is dry enough to cultivate, the portion that was thrown up about the plants, and the manure which was placed on it, should be levelled off, the ground cleared up, necessary pruning looked after before growth sets in, and then the beds are ready for another season's blooming.

These directions as to covering with leaves or litter and bending down the branches do not apply to the hardy roses but that portion of them relative to throwing up the earth and putting on manure does. As mice are apt to find a winter's shelter under the leaves or litter and eat the bark off the roses, poison traps should be laid for them. Throwing up the earth and covering with manure are the most essential features of these recommendations because if the crown of the plant is preserved in the tea section, they will bloom well from the new growths even if the tops are killed off. One thing more in cultural instructions and I am done. During long-continued dry spells, be sure that the beds do not suffer for water, and when you water at all do it thoroughly, no mere surface sprinkling, as it only aggravates the plants without benefitting them, put the hose on and let it run until the bed is saturated to the roots of the plants.

INSECTS AND DISEASES.

And now for the insects and diseases. These could be dilated upon to a wearying length and then all that might, could or should be said would not be said, so I will be as brief and concise as possible. The first in the animal line is green fly. This is one of the most common, but fortunately the most easily destroyed of any insect that attacks the rose, as it succumbs to tobacco in any form, the most convenient being tobacco dust, which should be liberally scattered over the plants, and be sure that it reaches the under side of the leaves, first wetting the foliage so that the dust will adhere to it. This should be done as soon as the plants start to grow, so as to prevent the insects from gaining a foothold, in which case, it is very difficult to get rid of them. The

rose beetle, rose chafer, or rose bug, that "pesky critter" which eats up the young buds and tender leaves, almost defies destruction; he is invincible, usually because of his numerical superiority, but hand-picking and knocking off on sheets early in the morning, also a liberal use of the powder bellows and pyrethrum powder will get away with him. Open vials of bi-sulphid of carbon hung among the plants is an efficacious remedy, but I think most people would tolerate the bugs sooner than that. The rose leaf-hopper is another annoying pest. Treat him to whale oil soap, or kerosene emulsion and treat the rose slug to the latter beverage also; they don't like it and it doesn't like them, so get them together and let them fight it out to a finish. The only sure remedy for the root gall-fly, a small larva which attacks the roots, producing galls, causing a rapid loss of vitality and eventually killing the plant attacked, is to dig the plant up root and branch and burn them when found to be badly affected.

Mildew is a species of fungus generated by exposure to chilling winds, and is apparent by the presence of a grayish white film on the affected parts; it is very hard to effect a cure in the open air, where the conditions which produced it are beyond control; but it can be held in check by dusting the plants with flowers of sulphur. Black spot is a parasitic fungus which manifests itself in the form of round or irregularly shaped black spots upon the upper surface of the leaves. Generally only the full grown leaves are attacked and it gradually spreads through them, destroying the circulation of the sap and causing a premature fall of the foliage. The moss roses, hybrid perpetuals and the hybrid tea roses are more subject than the tea or monthly class to this disease. There is no known certain remedy for it up to the present time. The only thing to be done is to pick off and burn all affected leaves so as to prevent its spread, as it is quickly contagious. It is usually a consequence of an injury to the roots either by an excess of moisture or an excess of drought. When grown out of doors the danger from drought may be remedied by watering,—but nothing can guard against injury from dull, wet weather. Spraying with Bordeaux mixture before the leaves unfurl is a preventive remedy. Rose leaf spot is usually found where there is poor drainage and in crowded corners, or when the plants are too thick. Reverse these conditions to get rid of it and burn diseased parts. Rose rust is another form of fungoid disease, which can be checked by using the copper fungicides. Cleanliness, preventing overcrowding and good cultivation are the best safeguards however against all these.

VARIETIES TO PLANT.

And now comes the most difficult question to decide, viz.: what varieties to plant. This is where the doctors are sure to differ. There are in existence at the present time, say in round numbers, two thousand five hundred varieties of roses, an embarrassment of riches. If I had the space every one of them would be planted; the real pleasure of a rose garden does not consist so much in comparing reds with whites, yellows and pinks as in studying the nice distinctions and individual characteristics. Many we learn to love for their faults.

The late Mr. Peter Henderson related an amusing story in "Gardening for Pleasure" bearing upon this question, which is worth repetition. An old German florist said to him once: "I haf so mooch droobles mit de ladies ven dey comes to



PYRETHRUM ROSEUM FL. PL. [SEE PAGE 315]

buy mine rose. Dey all vants him hardy, dey vants him dooble, dey vants him nice gooler, dey vants him schmell goot, dey vants him moonldy, dey vants him to be everyding in von rose. Now I haf to say to dose ladies, dat I sees not dat lady dat is rich, dat is young, dat is goot demper, dat is bootiful, dat is healdy, dat is schmart, dat is efery dings in von lady. I sees her not mooch." There is more truth than poetry in the German's petulance.

And what rose lover would want all the good qualities in one rose? Not many at all events. The variation is the charm. We would wish that the fragrance of La France was bestowed on Crimson Rambler, or that Persian Yellow was devoid of its villainous odor, but we will not part with them on that account. We may wish that the little polyantha or multiflora roses were allotted a perfume equal to the teas or hybrid perpetuals, but they are none the less charming without it. Some day perhaps our hybridizers will give us roses with qualities now lacking in our present favorites for which we thank them in advance. Some day, too, we may have a nomenclature committee, who will meet the French roses at the portals of our country and re-christen them with a pronounceable name before presenting them, for which we all most devoutly thank them in advance. A rose by any other name than "Mademoiselle Suzanne Marie de Rodocannachi" would smell just as sweet, and we would not miss our train trying to tell our neighbor what it is called. It is to be hoped that the young lady changed her name and that it was a shorter one. Provision should be made in such a case for a like change in the name of the rose. The man who called a rose "Grande Duchesse Heritiere Marie Anne de Luxembourg" had no consideration for the poor gardener or florist who would have to write it on a four inch label with a stump of a pencil.

They don't write it. They simply say the rose is no good; it is relegated to obscurity and so they have their revenge. It is a pity that the French raisers cannot see the absurdity of calling roses such long names and above all calling them after every member of a family, resulting in unlimited confusion.

The last five years has been most prolific in new roses, in fact almost a revolution has taken place, and the planter to-day has vastly improved material to select from. That grand rose the Crimson Rambler has added an entirely new feature to the garden and must be reckoned with for a complete rose garden, either trained in pillar form, on an arbor, or on the house. No garden is complete without it. Following in its wake, we have the Yellow Rambler (Aglaia) and the dream of years is realized in it. Then we have the "Pink Rambler" (Euphrosyne) and the "White Rambler" (Thalia). It is perhaps too early yet to say that these latter are of ironclad hardness, but they promise well. Another beautiful pillar rose is Carmine Pillar, unique in its magnificent shade of rosy carmine. *Rosa Wichuraiana* has added another charming feature to the rose garden, and I do not know a more pleasing sight than to see it trained up to a post as a single specimen, or trained to form an archway. Its foliage alone will repay for the trouble, but its flowers are most charming in their grace and beauty. The double varieties of this are a great advance, equally beautiful foliage, flowers exquisitely fragrant. The "Pink Roamer," one of the hybrids, has the charming color of Carmine Pillar, and is a most useful rose. For covering terraces or low boundary walls, these roses are of inestimable value. The new Hybrid Sweet Briars add another feature to our garden roses.

The hybrid tea section has been wonderfully developed, particularly by J. Pernet-Ducher, who has given us Mme. Car-

oline Testout, Mlle. Germaine Trochon, a yellow variety like "Sunset," which has proved hardy at New York, Mme. Abel Chatenay, a beautiful pink rose, and Souvenir du President Carnot. These are all fine garden roses. Belle Siebrecht must not be overlooked as a summer rose and that grand acquisition, Kaiserin Augusta Victoria, supplies the finest white flowers it is possible to get. For those who like novelty in roses that taste can be satisfied with Roger Lambelin, crimson and white, just like Gen. Jacqueminot after being treated with a sulphur match as we did when boys. Then we have that wonder, the Inconstant Beauty, with its many-colored flowers, another and a lovely "freak."

In hybrid perpetuals the year is made memorable by the introduction of Jubilee, the rose that won for its raiser the gold medal of the Massachusetts Horticultural Society, peerless in its magnificent velvety crimson and pure red. And before I forget it let me whisper in your ear that there is another American rose which is coming out soon and which will be worth having in the garden, viz.: Mrs. Robert Garrett, a hybrid tea of the largest size, long, pointed buds, a beautiful clear pink, as yet, it is without a rival in sight. And so as not to create a wrong impression, let me say that it is likely to lead all the pink forcing roses as well because of its size and magnificent color.

And what garden is complete without the *Rosa rugosa*? None. A rose garden without a representative is like the play of Hamlet without the moody Dane. If there is room at all put in a plant of that beautiful child of the *rugosa*, Mme. Georges Bruant. Don't forget to save a corner for the moss roses, as moist and cool as you can get it. There is nothing on earth prettier than a perfect bud of the Old English, Glory of Mosses, or Crested Moss, not forgetting that pale beauty, Comtesse de Murinais. In a pity our climate is not more in accord with their wants and I for one would surrender tomatoes so that we could have them in perfection.

Speaking of climate reminds me that people will hanker after standard roses, in the face of the prohibition nature has set against them here. There may be beauty in a standard rose "I'm not denyin' of it" but it is associated in my mind with the circus clown on stilts, the difference being that he gets on spindles and looks ridiculous for money, while the poor rose is perched on a stork's leg for a whim, or as a tribute to laziness. If you have room at all, put in a plant of *Rosa setigera* where it will have room to scramble. 'Tis patriotic to do it and you will never be ashamed of it. And near by put in a plant or two of *Rosa rubiginosa* but not too near, or its American cousin is apt to throttle it. A little farther on put in Persian Yellow and its paler sister Harrison's Yellow. By way of variety put in the old Austrian Copper, the *multiflora japonica*, the Dawson rose. Give them plenty of room and let them have their own way to a great extent, then no one can cavil at them on account of stiffness.

There is no limit apparently when once we start to individualize in roses but the little polyantha roses must not be forgotten as an edging for your beds of tea roses, and above all Clothilde Soupert. One of the newer tea roses I must not forget to mention viz.: Princess Alice de Monaco, somewhat on the order of Duchesse de Brabant (Comtesse de Labarthe), but more compact and even more free in blooming.

THE BEST ROSES.

Now any one who attempts to talk about roses is sure to be asked which are the best? In the bush roses, if I were limited to a selection, I would name the following: In hybrid perpetuals: Jubilee, Mrs. John Laing, Ulrich Brunner, Dinsmore, Anna de Diesbach, Paul Neyron, Mme. Gabriel Luizet, Helen Keller, Gen. Jacqueminot, Baron de Bonstettin,

to see them supplied next year at this place by some other rose lover who will brave criticism by making another plea for roses. We may have our differences of opinion as to methods of culture or selection of varieties, but it is safe to assert that we are all agreed on one thing, viz.:

There is not a single flower that grows.
Can vie in beauty with the rose.



VIBURNUM PRUNIFOLIUM

Baroness Rothschild, Mabel Morrison, Margaret Dickson, Victor Hugo, S. M. de Rodocannachi, Alfred Colomb. In hybrid teas: La France, Souvenir du President Carnot, Captain Christy, Kaiserin Augusta Victoria, Mme. Caroline Testout, Souvenir de Wootton, Augustine Guinoiseau, Mlle. Germaine Trochon, Madame Abel Chatenay, Belle Siebrecht, Madame Schwaller and Camoens. In tea and monthly roses: Souvenir de la Malmaison, Hermosa, Marie Guillot, Maman Cochet, Clothilde Soupert, Marion Dingee, Princess Alice de Monaco, Bridesmaid, Perle des Jardins, Francisca Kruger, The Bride, Marie Van Houtte, Sunset, Corinna, Devoniensis, Mme. Welch, Mrs. Paul, Mme. de Watteville.

And I would try hard to squeeze them all in old and new. With this I close. The trouble has been in preparing this "plea" what to put in. There is no doubt that many will find serious omissions; they are granted in advance, and I trust

Trees and Shrubs.

VIBURNUMS.

For park and garden planting the viburnums are almost indispensable among the showy blooming shrubs of spring. The long period of blooming of the many species, their showy fruit and brilliant autumn foliage, their vigor, hardiness and general adaptability serve to make them worthy of a place in the first rank along with the prunuses, pyruses and lilacs.

Among the showiest bloomers at Decoration Day are the two species which we illustrate from photographs taken at the Arnold Arboretum, *Viburnum tomentosum* and *V. pubescens*. The former is supposed to be the original or "single" form of the now popular *V. plicatum*. Although known by botanists and others

for a long time, it has always been scarce and has not been generally introduced into cultivation, but as its good qualities become more widely known it is sure to take a prominent place. It is well adapted for planting in small places, full grown specimens rarely exceeding five to ten feet in height and it being possible to keep it down to the smaller size by pruning. It is of good habit, with large, downy, deeply cut foliage. As the plant reaches maturity it flowers very freely, the cymes of silvery white flowers being borne gracefully on long, flexible branches which are very decorative on the plant or when cut for indoor decoration. The berries are small and blue, the foliage fading yellow in autumn.

Viburnum pubescens is a neat low shrub from three to four feet in height, a native of the United States and very abundant through New York state. Its habit is dwarf and compact and foliage very fine. It is of the easiest culture and a most prolific bloomer, hence a very desirable shrub for general planting.

Among the viburnums also in flower about the same time, which are well worthy of cultivation, are *prunifolium* and *Lentago*. *V. prunifolium* is a very handsome large shrub or small tree growing anywhere from five to twenty-five feet in height and is a native of the United States. It has rich glossy foliage, very little subject to the attacks of insects and its handsome flowers, closely resembling the laurestinus of Europe, are borne in great abundance. The fruit is blue black in autumn. *V. Lentago* is also of large growth with good, clean foliage and yellowish white flowers borne in very large cymes. It has a good autumn coloring and the fruit, which is first red and afterwards blue black, is edible. W.

PRUNING TREES.

Now is the time to examine your ornamental trees that have been planted within a few years. If any branches are growing so as to cross others, and thus in time chafe and injure them cut them out; or perhaps they may be pulled one side and aid in filling in a gap. Sometimes a tree is one-sided, leaving an open gap in the foliage. Look and see if at the sides of this gap there are not some branches that might be spared and drawn to one side to fill in the head. If so, fasten them in place, using small rubber tubing about the size of a lead-pencil cut into lengths of four to five inches, through which run strong hempen twine. Place the rubber around the limbs; it will not cut or injure them. Branches may be spread apart by taking a piece of fishing cane, cutting it the length corresponding to the width desired to spread, making a hole through the cane at each end and tying it to the branches, thus holding them apart.

Sometimes there are two or more leaders which is not always desirable. Choose the one desired to remain in the ascendancy and either cut back the others or pinch out their extreme points. This division of leaders generally occurs where the original was cut out, or its terminal bud killed, and they do not always stand perfectly upright. If the one retained is too oblique, it may be desirable to fasten it in a more upright position. Or a single uninjured leader may for some cause take a downward turn and require straightening. This can be done by splicing or tying a slender cane or stick to the trunk below where the leader starts, and long enough to reach up and include the leader. Use bast for tying as by the time

its mission is ended it decays and the stick drops.

Where the terminal bud of an evergreen is killed, thus injuring its leader, cut the leader back one-half last year's growth, and choosing the most desirable upper side branch, draw it upwards gently as far as you can, and tie it to the stump of the old leader. In the fall the balance of the old leader may be cut out. When the trees make their new wood during the summer, they make it in the lines set by the position of the branches at the time, and next spring all strings and "harness" may be removed for "as the twig is bent the tree's inclined."

Some branches may be outgrowing all others. If so, and you have noticed it before they are too far out, pinch off the extreme point; if too far out, cut back, but in cutting back, cut to an outside eye, that is an eye, generally underneath. When cut to an inside eye (upper eye) the branch is inclined to grow into the body of the tree and cross other branches. Where the eye is at the side you will have to take your chances. Pinching out the terminal points causes more sap to be utilized by the laterals nearer the trunk, causing a denser head, which is further thickened by two terminals taking the place of the one pinched out.

Young soft wooded trees, like Wier's cut leaved maple should be cut or pinched back quite often in order to induce a division of the branches into numerous slender ones, instead of a few large forked ones, that are so apt to be broken by the winds.

W. C. E.

VINES NOT FLOWERING.

A correspondent is in distress because a



VIBURNUM TOMENTOSUM.



VIBURNUM PUBESCENS.

wistaria vine which she planted some six years ago has not yet flowered, though making a nice growth every year. It is planted to a porch she says, but has not yet reached the limit of the space allotted to it.

We would advise the lady not to lose heart, for the vine will surely bloom later on. The statement that it makes a nice growth every year, gives a clue to the cause of its failure to flower. Hardly any vine will flower until it reaches the end of whatever it has to cover. It can be seen in the case of trumpet vine, English ivy, akebia, etc., as well as in wistarias, and in many trees and shrubs. When it has expended its strength in reaching the limit of the porch it will most likely turn its attention to flowering, and when once it does this it may be looked for every year.

When wistarias and similar vines are treated as shrubs, tied up to a short stake for a year or two, they bloom sooner than when as vines. Not meeting with anything to support themselves, the force is directed to flowering.

Philadelphia. JOSEPH MEEHAN.

MOVING LARGE TREES.

I enclose photograph of a large hawthorn, taken within fifteen months' time of its removal from the woods. The tree measures nineteen inches in circumference one foot above the ground. It was planted in March, 1896, and photographed early in June of the present year when in bloom. It merely illustrates the fact that even as hard wooded a tree as the hawthorn can be safely moved, even of large size, if proper care is given it.

It often occurs in laying out a new place that certain situations seem to require one particular kind of tree, and furthermore require the peculiar form assumed by that tree when matured, it

becoming necessary therefore to plant large specimens. Such a proposition confronted me. Immediately behind the edge of the lawn here shown runs the main ravine some eighty odd feet deep. A spur extends into the lawn at the left. Sitting in the rustic seat shown, and looking to the left in a line with the tall white oak whose bare trunk is seen, one can enjoy a magnificent view of Lake Michigan, over the tree tops of the ravine. These trees growing on the sloping banks from a V shaped frame, but their tops are low enough to enable a part of the beach and the waters to the sky line to be seen. Here is a view worthy of an extended visit, where one should loiter and watch the everchanging cloud effect upon the water, or on moonlight evenings follow the incoming golden sheen from the rising August moon.

A rustic seat on a bare lawn would be uninviting, a rustic arbor, considering the other surroundings, would be out of place. Nor is there any arbor-forming tree that seemed suitable. The weeping ash or Camperdown elm would in time sweep to the ground, and interfere with the outline of the curve of the outer edge of the lawn, narrowing in view this point of land, whereas it is essential that it be broadened rather than narrowed. In thinking over the matter I came to the conclusion that a matured thorn would be just the thing. Were the situation one on a large open lawn where the foliage would be seen against the sky, I would have chosen the variety *Crataegus crus-galli*, the cock-spur thorn, as the stratified layers of foliage are very effective, but that effect would be lost so close to the ravine trees.

Our woods are full of thorns and I am inclined to think there has been considerable hybridizing as there seem to be forms not recognized by local botanists or described in the ordinary literature. I commenced looking around for my tree. The first requisite was a broad spreading umbrella form. In flower all are about the same, that is, the distant effect, so I paid no attention to that feature. Then comes the foliage; some are dark and glistening, certainly a good feature; and finally, the color and disposition of the fruit. Here was an essential point. To have a handsomely berried tree in such a prominent situation was an object. I therefore put off my hunt until fall, and must confess that my search was a long one. I often found the exact form I wanted, but the berries were poor in color. Plenty of brilliantly colored berried ones were seen, but the tree lacked size or form.

Finally in a farmer's cow-yard I saw my tree. The top was one mass of small, very bright red berries in flat clusters, each berry the size of a plump currant, and the foliage dark and glossy. A bargain was soon made with the farmer, and early in January a trench three feet deep and fully as wide was dug around the tree in a circle so that the inner ball was nearly nine feet in diameter. In very early March, after the ground was well frozen, a four-horse team, and four men with jackscrews and heavy timbers, proceeded to the tree and it was brought to its present home with a ball of unbroken soil about its roots over eight feet in diameter and fully three feet thick in the center. Only two roots extended beyond the ball of earth, and they not thicker than one's finger.

In the meantime a hole for its reception twelve feet in diameter and three feet deep was prepared and filled with good soil. On the top of this soil was placed a very

thick layer of manure, so that when wanted, the soil was not frozen. The first summer no manure was given the tree, nor was the sod allowed to grow within the twelve foot area. In September, the soil was scraped off for a depth of six inches and a layer of bone meal and fine manure put on and the soil replaced. This spring it made magnificent growth and flowered to perfection. It is the most expensive tree on the place, but is cheaper than a summer house whose place it takes, and is an object of admiration when in flower and again when in berry.

About the same time I moved this tree I saw one moved near a neighboring town, with a ball but four feet in diameter, showing myriads of roots cut off, some quite thick. It is needless to say that the tree died the same year.

W. C. EGAN.

Battlefield Flowers.

BATTLEFIELD FLOWERS.

FLORAL TREASURES OF GETTYSBURG.

Thinking of GARDENING when on a visit to the battlefield of Gettysburg in the early days of June, I noted all the wild flowers and trees I saw on the trip, assured that it would interest some of its readers at least to know something of them. I may not have space to name but the most striking of what I saw. From Philadelphia, I took the beautiful Reading route, which takes one via Reading, Harrisburg and the Cumberland Valley to Gettysburg. Those who love trees and flowers would be pleased with the view from the car window; the agriculturist with the splendid crops, the horticulturist with the beautiful trees and flowers, and the lover of the nature with the splendid picture the whole presented.

The slippery elm, *Ulmus fulva*, is abundant along the Schuylkill River near Norristown. Its broad leaves and somewhat drooping habit well distinguishes it from *americana*. Not far above that city the Jersey pine, *Pinus inops*, appears. This is not a tall grower, but forms a bushy small tree. It is not at all abundant along the route. The white pine is scattered pretty well all along the route, and especially after passing Harrisburg and getting in closer contact with the Blue Ridge. The rare *Pinus pungens* grows near Harrisburg, but it was not visible from the cars. It distressed me to see the ravages of the locust borer. The yellow locust is abundant in the Cumberland Valley. In some cases dozens of trees were visible, the tops entirely dead, all due to the borer, which has long made the growing of this tree for posts somewhat unprofitable. Even at Gettysburg the work of the borer was visible on many of the trees about the field.

The deciduous trees of Gettysburg did not appear to me to be in great variety. Among oaks, the white, red, pin, swamp white and chestnut seemed to complete the list. The chestnut, *Quercus prinus montana*, is abundant on the rocky hills, especially on the summit of Big Round Top. And I found that the group of oaks at the Bloody Angle, the crest of Pickett's charge, some 25 trees or more was with but two exceptions, composed of this oak. It is one of the most ornamental of the genus, its large, shining, chestnut like leaves rendering it so.

The Judas tree, *Cercis canadensis*, as well as the butternut, walnut, ash and hickory are common everywhere. In the Devil's Den, a wierd looking place, where

boulders of many tons weight each are rolled one on the other, three or six deep in places, many of the trees named are growing. In addition to those named I found the following trees and shrubs in this vicinity: Red cedar, witch hazel, nettle tree, *Celtis occidentalis*, linden and hornbeam. And of vines and plants: Wild grape, Virginia creeper, tradescantia, *Heuchera americana*, *Fumaria officinalis* and, though not in flower, lots of *Solidago caesia*. Of shrubs in general seen in various portions of the field, the following comprises the list: *Rhus glabra* and *copallina*, wild plum, *Prunus americana*, *Viburnum prunifolium*, and *acerifolium*, *Spiraea (Neillia) opulifolia*, *Cornus paniculata*, *Zanthoxylon fraxinæfolium*, *Rubus odoratus*, *Ceanothus americanus* and *Cerasus virginiana*. Of these a large patch of the *Viburnum acerifolium* was particularly beautiful. It was on a hillside near the famous Culp's Hill, and had spread to cover a space of about eight feet square, and being full of its white flowers it was a pretty sight.

Among herbaceous plants the prettiest sight I saw were the masses of *Pentstemon pubescens*. Not a dozen or two, as sometimes seen near home, but a thousand. In old meadows, cleared woods, along the road side it appeared, sometimes in hundreds in one place. As all were in perfection of bloom the lovely scene the bluish purple flowers created can be imagined. Could not the seeds be sown broadcast in some meadows now bare of them, or one or two plants set out and allowed to seed themselves?

In similar situations in many portions of the field were a great many of the bright colored *Phlox pilosa*, a species not at all common. Not having one at home, I possessed myself of one from a corner of the "wheat field" near to a little stone which told me "Here fell Fred. Chapman, Capt. Co. H. 27th Conn. Vol." Another pretty phlox, *maculata*, was growing in wet places. This is a taller grower than the other, and is one of the parents of many of our common garden perennial phloxes.

Veronica officinalis displayed itself nicely on a sloping bank, for which purpose it can be planted to advantage, as I have found. *Asclepias quadrifolia* was nicely in flower, *rubra* was about to open, and a solitary plant of *tuberosa*, not yet showing flower, proved its existence there.

Among other plants in flower were the following: *Houstonia carulea*, present everywhere, even on the elevated round tops; *Lysimachia quadrifolia*, *Hieracium venosum*, *Aquilegia canadensis*, the common scarlet columbine; *Specularia perfoliata*, *Cynoglossum virginicum*, *Thaspium aureum*, *Nuphar advena*, *Solanum dulcamara*, *Thalictrum cornuti*, *Oxalis violacea*, *Smilacina racemosa*, *Zizia integrifolia*, and *Senecio aurea*. The latter existed in great quantities in the meadows, its yellow flowers contrasting nicely with the green about them.

Of ferns, the variety is not large. One of the commonest is *Woodsia obtusa* and it thrives nicely there. It is abundant on the Big Round Top, along with *Aspidium marginale*. *Polypodium vulgare* and *Botrychium virginicum* were observed, but not an osmunda of any kind. Near the famous Spangler's spring in what was the Confederate lines, I found a rock fairly covered with the walking fern, and *Asplenium ebeneum* was abundant and flourishing in the same place.

Along Hancock avenue, Slocum avenue, and in other portions of the battle field, trees have recently been planted, where



A RECENTLY TRANSPLANTED LARGE NATIVE HAWTHORN.

some had been cut down some time ago, to bring the woods back to their original appearance, as I was told. I regret to add that if this is the intention, a grievous mistake has been made. Such trash as the Carolina poplar and silver maple has been largely used, and worse than all is the introduction of a lot of foreign trees. I did not hunt for them, but I saw several English oaks and salisburias in the lot. Think of planting foreign trees to bring back an American battlefield to its original state. Even if not the intention to do this it ought to have been. Whoever has charge of the work should be made to take out everything excepting what is native to the locality, whether native or foreign.

A piece of woods in which the monument of the 5th Ohio Regiment stands, near Culp's Hill, is much disfigured by this planting, as is Wolf Hill and the other localities named. There would be no trouble whatever in procuring the ash, oak, hickory, walnut, etc., similar to the large trees already there and it should be ordered done. JOSEPH MEEHAN. Philadelphia.

Cold Pits.

A GOLD PIT.

I want to build a pit to winter flowers in and for early forcing, to use without fire heat. Our winters are mild but very changeable, only a few nights of zero temperature and some years not that low. Can arrange to supply some heat for extreme weather, but don't want expense of regular heating apparatus and steady fire. Want it about 10x12. My idea is to build it behind wood house, digging out a path 3 feet deep and 3 or 2½ wide, the length of pit, leaving the shelves even with outside surface, path to be bricked up and brick floor, with

entrance through wood house. This will make the pit run southeast and northwest, a rather odd way from what I have read in your paper, but don't see how I can better it to have it convenient to dwelling and have the entrance through some house which will keep the rain out. I saw one at our neighboring town built on this order except it stood out alone and nothing at all over entrance, which you understand is dug out and steps placed. I thought this way would cause a lot of water to accumulate in path during heavy rains.

Which will make the better roof: even span, lean-to or three-quarter? Will be glad to have your idea on my plan and any improvements you can make. I understand a small greenhouse would be better, but I cannot have that. The pit I saw was even span, ridge running east and west, sashes hinged on ridge and raised like a hotbed sash. Is this the best way? Sashes were about 3 feet wide. Maryland. H. H. STEVENS.

The aspect of the pit with ridge running northwest and southeast is certainly not the best. If it were possible to let the house face due south or a little east of south it would be much better. Without artificial heat it will be impossible to keep tender plants alive, much less growing, in any climate where you are liable to have zero weather occasionally. So make up your mind to have the means to heat the pit even if you only need it half a dozen times during the winter. The shape roof should certainly be *equal span*; any other style for such a pit would be absurd. Ventilation at the ridge is much better than at bottom. Perfect ventilation in a pit of that size would be ventilators 2 feet deep the entire length of the ridge and on the east side, unless your prevailing winds come that way.

I do not like these dug out pits and you save nothing in heating for you have the same glass exposure. They are awkward to dive down into and laborious to climb

out of. Unless drained, which is expensive, you will be troubled with water; and the labor of excavating and building up walls on each side of the path will be four times as expensive as building side walls, say 3½ feet high, with good cedar posts and two thicknesses of board, both on the outside of post, then you have a little house you can take some comfort in and it can be heated cheaply and with facility.

WM. SCOTT.

Palm Leaves.

PRESERVING SAGO PALM LEAVES.

Can you tell me how the florists cure sago palm leaves and what preparation they use to get the green tint? I have some fine leaves and I would like to use them for decoration. Kindly let me know through GARDENING. H. A. B.

I can only say that I have not tested the operation referred to, but believe it to be as follows: The leaves are first dried under sufficient pressure to prevent them from curling up, this being accomplished in practically the same manner that is usually adopted for the drying of large botanical specimens, that is, by placing them between large sheets of blotting paper or other absorbent material, then cover with a smooth board to distribute the pressure, and place a heavy weight on the board.

The absorbent will need changing from time to time as it becomes dampened from contact with the leaves, and after the latter are quite dry, the color may be restored to a great extent by dipping in a solution of aniline dye of a suitable tint.

The dyed leaves will require the same care in drying as they did in the original condition, and when thoroughly dry the final finish is given in the form of a thin coat of clear shellac varnish.

W. H. TAPLIN.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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A SPLENDID SINGLE ROSE now blooming is a hybrid of Mr. Jackson Dawson's, not yet disseminated. It is a cross between *Rosa rugosa* and the universal favorite, General Jacqueminot. The flowers are large and open, numerous produced, and very near F. Schuyler Mathew's pure red, but inclined somewhat towards magenta, retaining its brightness to the last.

ON June 16, 1896, the Columbine Association had enrolled its first one thousand members. The object is to eventually use its influence in inducing Congress to adopt the columbine as a national flower. Any one interested in the movement can gain more information on the subject by addressing Mr. J. S. Pray, secretary of the Columbine Association, P. O. Box 2774, Boston, Mass.

PAUL'S CARMINE PILLAR ROSE is in bloom, and what a beauty it is! Saucer shaped single roses, fully three inches in diameter, of the color that gave it its name, dot the bush from the ground up to its tip, some eight or more feet high. A matured plant must be a sight worth going miles to see. This rose is undoubtedly hardy in most sections of our country, and in all sections under protection; and should be as universally grown as the Crimson Rambler.

THE Agricultural Experiment Station at Morgantown, W. Va., has been making extensive experiments with poultry and has now issued a bulletin on the subject which can be had free of charge by any one applying for it.

THE WILD COW PARSNIP (*Heracleum lanatum*) found growing in moist places, makes a very decorative display for large bouquets in front of mantel places or room corners. It may wilt a little when first placed in water but it soon recovers and lasts in good form for several days. The broad white umbels rising above the massive lacinated leafage are quite effective.

A GROUP of 25 plants, set quite closely together, of the double cuckoo flower, or as it is sometimes called, "Ragged Robin" (*Lychnis Flos-cuculi*), makes a very fine show, especially at a distance. The color is a peculiar shade of magenta seldom seen in flowers, and as it lasts long in perfection it is a desirable garden companion. In windy situations, if a heavy rain occurs, its flower spikes need staking, but it is worth the trouble.

LAST WINTER proved that in some instances a temperature of 25° below zero, prolonged for a few days, is fatal to Nordman's fir and the Japanese *Sciadopitys verticillata*. Both were protected, the former by a solid board fence as high as the tree, and the latter by a slatted crate, shading it, but allowing free circulation of air. The fir had all the terminal and lateral buds killed on all but the lower tier of branches, which were covered with snow, while the *sciadopitys* had all its buds destroyed. Both are injured beyond recovery.

IF YOU are not growing *Iris Hispanica*, make a note of it, and order some in time for fall planting. They are not expensive, are easily grown and are extremely delicate and refined in appearance. There is hardly a poor color among them. Another aristocratic appearing member of this family is the English iris, so named by the Holland growers, who first obtained the plants from England. Its habitat is the Pyrenees and it is known botanically as *Iris xiphioides*, but generally catalogued as *I. angelica*. This blooms immediately after the Spanish iris and is somewhat larger. It does not increase as rapidly and therefore is more expensive.

AN English paper says: "It is a very common complaint that peach and nectarine trees, when tied to galvanized wires, have their shoots killed back every year. Where the shoots touch the wires, and often for some distance above and below the points of contact, they become browned or blackened. These portions being killed it follows that all above them must sooner or later die for want of support from the roots. The explanation offered is that iron and zinc when wet generate electricity, and the shoots are thereby killed. The remedy against galvanized wires is to give them a good double coat of paint, which neutralizes their action."

GARDENING WORLD is responsible for the following pretty story: "The Marechal Niel rose was named by Empress Eugenie in the days of her splendor. When General Niel returned from the Franco-Prussian war, a poor man gave him a basket of yellow roses. In remembrance of the gift, the general struck a cutting from the stem of one of the blooms. When it grew into a good sized bush he took it to Empress Eugenie, who was delighted with the gift and the donor, but was surprised

the plant had no name. She said, 'I will give it a name; it shall be the Marechal Niel.' In this manner it dawned upon General Niel that he was promoted to the office of Marshal of France."

The Flower Garden.

PLANTS IN BLOOM JUNE 15.

June 15 finds the garden with a fine floral display. The roses, in endless variety and color are not yet at their best but will be in a few days. Since my notes of June 1, quite a lot of interesting flowers have come into bloom.

Sweet Williams are now at their best, and though common plants one cannot grow too many of them for they are very gay while in flower and last for some time in bloom. We treat them as biennials, raising a fresh stock each year. The seeds should be sown about July 1, to have good strong plants to winter over. The perennial larkspurs are now beginning to make a show but it will be a week before they are at their best. From Lemoine's strain we get some fine flowers and good colors. Some of the strains of these flowers are very poor, and one should get the best as they are one of the showiest perennial plants and so good for cutting. *Delphinium cashmerianum* grows about 18 inches high, the flowers about an inch in diameter; it is in every way a fine plant, very free flowering and fine for cutting. It is easily raised from seed and will bloom the following year. *D. Rembrandt* is a noble plant growing five feet high; some of them have dark blue flowers, while others are light in color; both should find a place in the garden.

The foxgloves (*digitalis*) are now about at their best and what a gorgeous show they do make! The variety *gloxiniæflora* in mixed colors is all that could be desired. The pure white ones with spotted throats are fine. In the purples we sometimes get some poor ones, but all are good enough to grow in a mass, and it is in this way they are seen at their best. We treat them mostly as biennials; as they sometimes do not winter over very well, seed should be sown now. The ever-blooming forget-me-not, (*semperflorens*) is now a mass of flowers. It is not so good as some of the other varieties, but as it lasts the most of the season and is quite hardy it comes in handy for cutting. *Verbena venosa* with us is not quite hardy and needs the protection of a frame. It is a free flowering plant and grows about a foot high, of a branching nature; it flowers much the same as our common verbena of the garden; the flowers are purple and can be used for cutting; it lasts a long time in bloom.

Coreopsis lanceolata and *C. grandiflora* are now giving us plenty of their lovely yellow flowers. For cutting this is one of the finest June flowering perennials we have, and how free they do flower! They don't last a great while but then they give us a few flowers in the early fall months, which makes up for it. They are easily raised from seed but they don't seem to be very hardy the first year, as we lost last winter the most of ours that were raised from seed the summer before, while the old plants in the garden came out all right.

Campanula persicifolia is one of the showiest bell flowers there are. It grows two to four feet high and has handsome spikes of large bell-shaped blue flowers. The white variety is also very fine. They are easily raised from seed

and if sown now will bloom the following summer. In fact so free does it grow from seed that the place where it flowered last year is just one mass of little seedlings about an inch high. Some of these we will transplant into a prepared bed for next year's flowering, while others will be left to flower where they are. But we will raise some from seed too, as then we will have the colors separate and know just what we have.

Gypsophila Stevenii has larger flowers than *G. paniculata* but in other ways it is nearly the same. It is a free flowering plant and its sprays of small white flowers are much sought after as cut flowers. The Spanish irises (*I. xiphium*) are now at their best and are very beautiful. There are many colors and all are good. By the time these are past the English irises will be in to take their place. *Linum campanulatum* has yellow flowers and grows about a foot high. It is a showy little plant but not very hardy and should have the protection of a frame in winter.

Some of the verbascons are now in good flower, and though only mulleins we consider them one of the stateliest plants we grow. It is a wonder they are not more grown for they are worthy of a place in every garden. Just look at that picture in Vol 1, page 273, of GARDENING, and you will see what beautiful plants they are. Among the varieties we have now in flower *V. phlomoides* is the showiest. It grows six to nine feet high and has yellow flowers. *V. pannosum* grows about six feet high and the yellow flowers are nearly two inches across. *V. Chaixii* grows four to five feet high and has bright yellow flowers with rose-lilac stamens; a showy plant. *V. ovalifolium* is a mullein lately introduced, but we cannot see anything striking about it. Judging from what we have seen of it it cannot compare with any of the other varieties mentioned. The flowers are yellow, about an inch in diameter, and the plant grows about four feet high.

Agrostemma coronaria (mullein pink) is a good free flowering plant with bright crimson flowers and woolly silvery foliage. The variety *alba* has pure white flowers. Both should find a place in the border as they are well worth a place in every garden. They are best raised from seed every year as when after they flower the most of them die out. *Salvia sylvestris* grows about four feet high and has long spikes of showy purple flowers which are good for cutting.

Anthericum liliastrum (St. Bernard's lily) has showy spikes of bell-shaped white flowers. It is a pretty little plant and the flowers are fine for cutting. *Oenothera fruticosa major* forms a dense branched bush with large heads of cup-shaped yellow flowers and lasts the most of the summer. *Lychnis chalcedonica* is a showy plant when in flower with its heads of scarlet flowers. The single form is not much thought of, but the double one is as good a perennial as any one could grow. *L. Haageana hybrida* has broad heads of flowers in endless variety of color. It grows about eighteen inches high and is easily raised from seed; in fact it is best treated as an annual. In *L. Senno* we cannot see any difference from *Haageana*; the flowers may be a little larger, but in other ways they are just the same; that is if our plants are true.

Scabiosa caucasica connata is one of the finest perennials we now have in flower. The flowers are quite large, blue and about three inches in diameter. It is one of the best perennial plants for cutting and lasts a long time in bloom. Potentillas are beautiful plants, if choice

named varieties are grown, but in raising them from seed very few good ones will be secured. In England these plants are largely grown, and they are well worth a place in every garden, but get the good ones. *Campanula glomerata* grows about two feet high, the stems terminated by dense clusters of purple flowers; a very showy plant and easily raised from seed. *Achillea tomentosa* is one of the showiest achilleas in the whole group. It grows only about nine inches high, and has flat heads of bright yellow flowers; it makes a nice edging plant. *A. Ægyptiaca* has nice cut white silvery foliage of compact growth; the flowers are yellow on stems about fifteen inches high; a good plant to cut from.

Self sown poppies are now keeping the garden gay. Those sown early this spring won't be in flower for two weeks yet. The pink catchfly (*Silene armeria*) is now in fine flower from self sowings of last year. This is a beautiful plant and it comes up every year of its own free will, and is so showy one cannot have too much of it; it is lovely for cut flower work. The Boston florists' ten weeks stock is one of the finest stocks we have seen for a long time. We raised some quite early, planted out in a frame, and in this way we have it at its best about this time. The others in the garden will come in later.

Among lilies in flower at this writing *L. umbellatum* is one of the showiest. This grows two to three feet high, the flowers four to six in number, and in color they vary from yellow to red, many of them being spotted. *L. monadelphum* is a grand lily, but one that is not easy to flower. We have had it in the garden for five years and it has yet to flower while bulbs that were planted last fall are now in bloom. It grows three to five feet high and has beautiful turban-shaped flowers. The color is yellow and some of the flowers are also spotted, which makes them very attractive; they are also highly scented. In pot grown lilies we now have *L. Humboldtii*, *L. auratum* and *L. longiflorum*. The varieties of *speciosum* and some others in pots are not yet in flower.

In the bulb frame we now have a fine show of *Gladiolus Colvilli* (the Bride). These were planted last December with the other bulbs, and in this way they have done fine; how nice they are for cutting. *Calochortus venustus oculus*, *C. v. citrinus*, *C. v. vesta* and *C. v. Eldorado*, gold blotch, all are lovely. We have flowered a great many this spring and early summer and there are still some more to bloom.

All the plants mentioned here have come in flower since the first of June. Among others that I have mentioned before, but which are still in good bloom, are the pæonies, *Viola cornuta*, pansies, aquilegias in variety, *Salvia argentea*, *Lilium parvum*, *L. tenuifolium*, *Allium Moly*, German irises and many other plants. I have not said anything about the roses, but as they are not at their best yet we will wait for a day or two and make notes of the best, as there are so many of them so near alike it is hard to say just which is the best.

Mahwah, N. J.

DAVID FRASER.

PYRETHRUM ROSEUM FL. PL.

[SEE PAGE 309]

According to the classification in use in this country the genus pyrethrum is included in chrysanthemum.

This species is from the Orient. It grows from one to two feet high and is quite hardy but of slow growth. The habit of the plant is particularly neat

and pretty; the feathery leaves have elegantly cut segments and the large long-stemmed heads, two and a half inches across, are beautifully regular. The pointed rays in this variety are a pale pink and the equally long disk florets are the same tint with a faint tinge of yellow lingering on some of the central ones. There is also a white flowered variety.

This plant is deserving of more general cultivation in gardens as it has few superiors in elegance of foliage and flower and its hardiness is beyond question. H.

SEEDS TO SOW IN SUMMER.

At this season of the year when there is not much to do in the flower garden, except to keep it clean and tidy, it is well to look forward to another year and get up a stock of hardy plants from seed now, which will give an abundance of bloom next summer.

The first of the hardy plants to bloom in the spring is the daisy (*Bellis perennis*). Though a common flower it has been one of the showiest we have had in the garden. The plants were set out in March just as soon as the ground was workable. They began to bloom right away and at this writing, June 18th, they are still in good flower and will last till the end of the month. They are better for the protection of a cold frame and are easy to keep over in this way. They should not be sown till about August 15, as they grow so fast. If planted earlier they will be too large to winter over. The best varieties are Longfellow, rose colored; and Snowball, white.

After these come the forget-me-nots. These too are the better for the protection of a cold frame, though they are quite hardy and will stand out all winter. When once planted in the garden they will seed themselves and come up freely. They can be sown now and planted out where they are to flower or put in a cold frame. The best varieties are Victoria, *palustris*, and the ever-blooming one, *semperflorens*. The last named blooms the most of the summer and is a good edging plant.

Arabis alpina comes in flower very early and is one of the finest spring flowering plants there are. The flowers are white and it can be associated with spring flowering bulbs to advantage. It is easily raised from seed and if sown now will bloom next spring.

Alyssum saxatile compactum yields a mass of golden yellow flowers, and like the arabis can be used with the spring flowering bulbs either for an edging or planted in a mass, allowing the bulbs to come up all through it; the effect will be very pleasing. Sow it now.

The sweet william, though an old-fashioned flower, is still one of the best free flowering plants, and at this writing it is in a blaze of bloom. Some do not like it as a cut flower, but when associated with others of a more graceful nature they are useful. There are many dirty colors among them, especially among the mixed ones, and it is best to get each color separate. The best are the dark crimson, double white and the auricula-eyed. They should be sown now and should be planted out in a prepared bed where no water will stand in winter. In early spring they should be planted where they are to flower. They are quite hardy with light protection. The best covering is one of evergreen branches.

The foxgloves are easy to raise from seed, and we think they are the most beautiful plants that one can have. Their tall spikes of flowers in various colors are pleasing to the eye, and they are seen at

their best when planted in clumps or masses. They are also fine for planting in the edges of the shrubbery, in fact they will bloom most anywhere. We treat them as biennials, but if they can be wintered over from year to year, the old plants give the largest and best spikes of flowers. *Gloxinaeflora* is the showiest one. It has spotted flowers in various colors. These should be sown now; and if frame room is plenty, put them there, they will be larger and better plants next spring.

Canterbury bells are not hardy and have to be grown in a frame all winter, but they need very little attention. They also make nice pot plants, and can be had in flower at Easter if taken into the greenhouse early. The seed should be sown about July 20. If sown much earlier the plants get too large.

Hollyhocks are the better for being sown every year. In old plants the disease is sometimes very troublesome and the only way out of it is to get up a stock each year. Sow some of the single ones; they are very nice, if for nothing but variety's sake. Sow at once.

Delphiniums are easy to raise from seed and if sown early in spring will bloom the first year. They make a fine display in the garden and are nice as cut flowers. Get the Lemoine strain; it is the best and all the colors are good. Sow now, and you will have nice strong plants for next summer's flowering; quite hardy.

Aquilegias, if sown now, will bloom next year. From a paper of *A. hybrida* a lot of good colors will be had, but the named ones are just as easy to raise as the mixed ones.

Oriental poppies come freely from seed and their big showy flowers are sure to please. They are quite hardy and will stand the winter all right.

The plants named are only a few of the ones that are easy to grow. Any one can raise them. They are all good and no garden is complete without them. They can either be sown in a prepared bed or in boxes. If sown in a bed the best covering to give is sand put through a fine sieve and patted down with a piece of board and kept well watered.

Mahwah, N. J. DAVID FRASER.

HESPERIS MATRONALIS.

On page 261 of GARDENING for May 15, Geo. S. C. Cover, in speaking of the above plant, brings to mind my early days when a boy competitor with the weavers, and our beds of double white sweet rocket (*Hesperis Matronalis*), Spinks (polyanthus), dusty millers (auriculas) and the *Daphne Cneorum*, constituted the stock; this was about the year 1833. It surely caught my early fancy, and since then I have never seen, and tried in vain to this day to obtain them.

I imagine few of the present day know either of them. This is a fast age—new things the rage, and old beauties, like old people, are left unnoticed. But if some of your well-to-do amateur readers would obtain and care for a bed of each of these, they would surely be delighted, especially with the double white sweet rocket. Those who may travel through Scotland will find all these in perfection and obtainable in unassuming and unlooked for places. WEST TENNESSEE.

HARDINESS OF FUCHSIA RICCARTONI.

English gardeners are familiar with many sorts of fuchsias which are hardy in the southern portion of that country. Among them are such kinds as *globosa*, *gracilis* and *Riccartoni*, and in the ex-

treme south ordinary hybrid fuchsias are not infrequently seen.

In Philadelphia small plants of *Riccartoni* have stood for several winters unprotected. The tops are injured, but fresh shoots are made freely from near the base when spring returns. I have but little doubt that if strong plants with two or three year old shoots were obtained, the killing back in winter would not be so severe, following in the line of what occurs in the case of such partly tender shrubs as the pomegranate and the crape myrtle. When first set out the latest growth will be partly or entirely killed in winter. But protect them awhile, say for two or three years, until the plant has become well established, and then the winter's cold will not hurt them to any serious extent. And no doubt it would be the same with the fuchsia.

Philadelphia. JOSEPH MEEHAN.

FALSE SOLOMON'S SEAL.

(*Smilacina racemosa*.)

This hands me plant, sometimes known as the "False Spikenard," is a native of rich woods from Canada to South Carolina and westward to Kansas. In cultivation it belongs to the wild garden where its graceful habit is in keeping with the surroundings. It is a most excellent cut flower, keeping fresh and in form for a long time, and lends itself most graciously to house decorations, furnishing its own green and holding its racemes of minute white flowers well above the foliage. It blooms in May or June.

The Fruit Garden.

SETTING OUT STRAWBERRIES.

It is not too early in the season to be making preparations for a strawberry bed. The runners on the old plants are now forming rapidly, and whether or not a good fruiting bed is had next season depends a good deal on these runners. Where a bed is in contemplation, runners should be looked for from a vigorous, healthy bed. If there are ample runners to permit it the point of the runner should be pinched off as soon as the first one has good root hold, that it may become extra strong. The soil should be very good, to assist the plants at first.

Just as soon as these first runners are nicely rooted, which hereabouts is in July, the new bed may be made. Lift the plants with some little ball of earth attached and set them in the new bed, and with a good watering afterwards the plants will take care of themselves. But when plants are purchased and have no soil with them, much more care in watering and shading is necessary, especially when the planting is in the heat of summer. I do not think much is gained in setting out runners without soil attached at any time but early spring. The chief object of summer or fall planting is to gain a bed for fruiting the next spring, and this cannot be done unless the plants make a good growth after they are planted. Plants removed with a ball of earth attached or those grown in pots, will produce a fair crop the next season. To get these plants as vigorous as possible is the object desired.

A bed of plants set out in summer and encouraged to grow nicely will give a fair crop of large berries, perhaps not as full a crop as an older bed, but still a very satisfactory one. It may be let alone for another season, but strawberry beds

should not be permitted to stand longer than two years. Indeed when plants are set in spring it is quite common to let them bear but the one crop, in the spring following, thus setting a new bed annually. Better results in the way of profits are obtained under this system than under the old one of permitting the beds to remain for several years.

The sorts to plant depend a good deal on the location. What does well in one place does not always succeed in another. Sharpless, Bubach, Capt. Jack, Chas. Downing and Parry are old sorts, but are still reliable with us. These are all perfect flowering ones excepting Bubach, and this needs planting near other kinds named, to gain its fruit. Sharpless seems the universal berry with us, just as the Sir Joseph Paxton is in England.

Philadelphia. JOSEPH MEEHAN.

WORMS IN STRAWBERRIES.

Our strawberries are large and fine (except that we have had too much rain) but we find several of the berries have worms in them, and a small snail was found in one the other day. We have had the beds covered with salt grass for a long time so we are utterly at a loss to know what to do. E. V. T.

It is probable that the snail and worms are but enemies enticed to the fruit by the peculiar cool, moist weather of the spring. Such weather will bring out snails. There is no known strawberry enemy in the shape of a worm. A small beetle sometimes feeds on the fruit. A good plan to get rid of it and other pests is to mow off the tops of the plants after fruiting and burn them. And it is just as well to start a new bed, from other plants, in another part of the garden.

STRAWBERRIES AND RASPBERRIES.

Will it pay to continue strawberry beds more than one year? That depends much on the condition of the bed at the close of the fruiting season. If the ground is rich, the rows well filled out, the crop light and nearly free from grass and weeds, it will then usually pay to continue one, two or more years. If however plants are exhausted by a large yield, and grass and weeds have been allowed to grow, it will be more work to place old beds in condition than to prepare new ones.

If to be discontinued, plow at once and sow some late crop for feed or fertility.

To renew old beds, mow off plants; as soon as dry burn over, reduce rows to six or eight inches in width with spade or cultivator. Remove all weeds, every particle of grass, apply a liberal dressing of fine manure, cultivate and keep clean same as with new beds.

Right here is one of the great benefits of keeping new beds perfectly clean. It saves a large amount of labor when beds are continued more than one year.

Old beds produce berries a little earlier, and the second year is often better than the first, when treated in this manner.

The bearing canes of raspberries and blackberries should be removed immediately after fruiting. Cut out all small weak canes, leaving only five or six in the hill.

The removal of old canes leaves no hiding place for worm or bug, or eggs of same. It also allows the free circulation of air, and the sun penetrates the center of the bush, making canes strong and

vigorous with a good development of fruit buds for the following season. The removal and burning of all dead, weak and surplus growth is the best preventive against disease.

In berry growing, remember that good work for two seasons is necessary. First, the most important, to grow, develop and mature strong healthy canes, vines and buds for next season's fruit. Second, to mature the fruit, which depends very much on the care and growth of the previous year. Favorable seasons for fruit are of little avail if the preparatory work has been neglected. M. A. THAYER.

SPRAYING.

Bulletin No. 121 of the New York Agricultural Experiment Station (Geneva) is an elementary manual of the apparatus, materials and methods used in spraying. Introductory remarks emphasize the necessity of careful study of conditions before applying remedies and give some practical suggestions as to what application to use for different classes of pests. The bulletin notes in concise form the merits and defects of various pumps and power sprayers tested by the station, giving an illustration of each and the name of its manufacturer and its price; describes some useful appliances and home made conveniences; and gives complete and careful directions for making the principal insecticides and fungicides. This information will be valuable to any one not already familiar with the principles of spraying. The station will be glad to send a copy of the bulletin to any one applying.

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THE PARK AND OUTDOOR ART ASSOCIATION.

The Park and Outdoor Art Association was organized at a convention of park commissioners and others interested in the development and design of public parks, in the improvement of villages and home grounds, and in the preservation of natural scenery, which was held at Louisville, Ky., May 20 and 21, 1897. Mr. Charles Eliot suggested shortly before his death that "a general association, to be made up of all who desire the advancement of art out of doors, including amateurs, land owners, writers, park commissioners and officers, village improvement societies, foresters, gardeners and others interested. An organization corresponding somewhat to the American Association for the Advancement of Science," and it was on these lines that the association was formed.

Papers of much interest were read, and the enthusiasm manifested by all present was very encouraging.

John B. Castleman, of Louisville (President of the Board of Park Commissioners), was elected president of the association. L. E. Holden, of Cleveland, Ohio (one of the park commissioners of that city), vice-president. Warren H. Manning, of Boston, Mass. (Landscape architect), secretary and treasurer.

The following committees were appointed, viz: Executive committee—F. L. Ridgely, of Missouri, Chairman. Constitution and by-laws committee.—John C. Olmsted, of Massachusetts, chairman. Publication committee.—Andrew Cowan, of Kentucky, chairman.

The next meeting of the association will be held at Minneapolis, Minn., June 23, 1898, when the constitution and by-laws will be submitted for approval and an interesting programme will be presented. The publication committee is now preparing to print the papers read, together with the proceedings of the convention, a copy of which will be sent to each member. It is also the purpose of this committee to print the names and addresses of all members with the report.

The membership fee is two dollars, payable annually in advance. You are cordially invited to join "The Park and Outdoor Art Association," and to assist in promoting the objects for which it is established.

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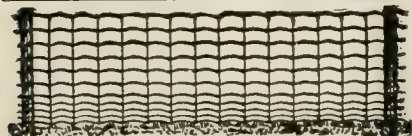
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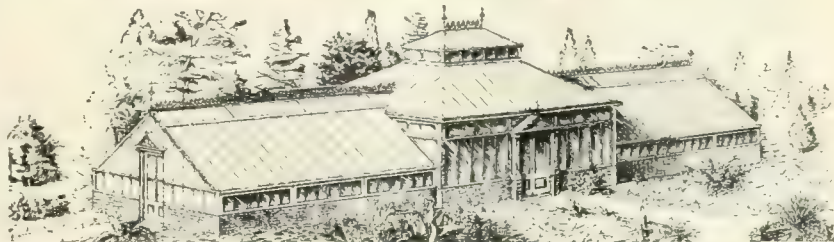
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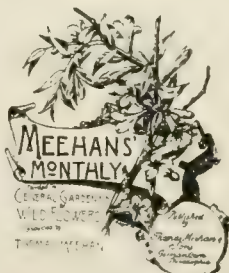
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No. 117.



A HEDGE OF DICTAMNUS (*Fraxinella*).

The Flower Garden.

HEDGE OF DICTAMNUS.

A hedge of an herbaceous perennial is a rather rare occurrence as but few species are adapted to such use. A showy spectacle is required when in flower and a pleasing appearance of foliage the balance of the season. The plants must stand up against winds and rains, and grow with vigor in heat and drouth. Probably one of the best for this purpose is the European gas plant, *Dictamnus albus*, and its variety *rubra*. Its synonym is *D. fraxinella* and it bears the common names of Gas Plant, Burning Bush and Dittany. It is an old inhabitant of the garden, having been known since 1596.

Under good cultivation it grows about two feet high, blooming in early June in long terminal racemes, white or a deep pink according to variety. It receives the names Gas Plant and Burning Bush from the supposition that on warm, close evenings the flowers emit a gas that may be ignited by a match. I have to take this statement upon the authority of others, as it has failed to produce this pecu-

liar phenomenon for me, but as this is the era of gas trusts the genus may have been subsidized. When gently rubbed the foliage emits an odor like that of a lemon peel, but when bruised has a faint balsamic scent.

The hedge illustrated is one planted three years ago on the beautiful grounds of Mr. A. Tracy Lay, Highland Park, Ills., and is not only a very handsome sight when in bloom, but is a constant reminder of his boyhood days when he played tag around just such a hedge and got spanked for running over the plants.

W. C. EGAN.

PLANTS IN BLOOM JULY 1.

The following plants have come in bloom since my notes of June 15. Canterbury bells are now at their best and are one of the showiest plants we have in the garden. The colors range from blue to white and pink. The double ones are good, so are the cup and saucer varieties. These are fine plants for massing and are seen at their best when grown in this way. After they are through flowering they are of no more use and a new stock has to be worked up for another year. Sow the seed now and winter over in a cold frame.

The border pinks in variety are giving

lots of flowers. They are very useful for cutting and last a long time. Cuttings put in about the middle of September and wintered over in a frame make plants that flower nicely the first year. Carnations in variety are also giving a few choice flowers. We treat them as we do the pinks, putting cuttings in about the same time. They are also easily raised from seed and if sown now and wintered over in a frame will bloom next summer. We have a lot of these seedlings in the reserve garden and they give us all the cut flowers we want. There are lots of single ones among them but they all do for cutting and that is what we grow them for. If there are any real good ones among them we will clean away the poor ones around them and layer the good ones next month.

Spiraea aruncus with its immense branched panicles of creamy white flowers is quite conspicuous. It grows four to five feet high and makes a handsome bush. English irises are now past but they were very good. They do not seem to be very hardy, as quite a few of ours were winter killed, although planted in a well drained part of the garden. *Campanula trachelium* and var. *alba* are showy border plants with large bell-shaped flowers. They grow three to four

feet high and remain in bloom for some time. *Alstromeria aurantiaca* is a choice border plant, the clusters of orange colored flowers being very beautiful. It is also a fine plant to cut from. It is quite hardy with us with no protection. *Geum atrosanguineum* has small double scarlet flowers and when grown in a clump it is quite showy and lasts a long time in flower.

Rudbeckia speciosa has dark yellow flowers with purple cone-like centers, each flower on a stiff wiry stem, which makes it nice for cutting. *Coronilla varia* is a handsome flowered and foliaged rampant creeper growing about a foot high. The flowers are pea-shaped and are very

every year, putting them in about the 15th of September and wintering them over in a cold frame, as they are not hardy. They are well worth the room in the frame, as they are a showy class of plants and bloom all summer. They can also be raised from seed, and the cuttings taken only from the best of them. Sow now to have plants for another year.

Delphinium formosum caelestium is a lovely larkspur. It grows about five feet high, the flowers dark blue with a white center. *Hemerocallis fulva*, the tawny day lily, is a common garden plant which has naturalized itself along the roadsides hereabout, and is met with

growing on will bloom the first season. The flowers are scarlet.

Among other hardy plants which I have noted before, but which are still in good flower, are the verbascons, delphiniums, sweet williams, foxgloves, mullein pink, scabiosas, coreopsis, achilleas, and many others.

Among garden lilies we have now a good display. *L. Hansonii* came in flower June 19, and is still in good shape. This is a strong vigorous growing lily, easy to grow and sure to flower when it gets well established. It grows about three feet high. The color is orange dotted with brown. The petals of this lily are very thick and heavy, having the appearance of wax. It is said that this lily is very scarce, but we can't see the reason why, as with us it multiplies very fast. *L. pardalinum* is a California lily of great beauty. The color is bright and showy and its habit graceful and striking. It is very hardy and will grow most anywhere in shade or in open, but it is noticeable that where grown in the shade the flowers are not so large as when grown in the open. The color is orange red spotted black. *L. Thunbergianum* (Alice Wilson) is a dwarf growing lily and one of great beauty. The flowers are large, lemon color. It only grows about a foot high.

L. candidum, the old garden lily, is still one of the best, its tall spikes of pure white flowers being quite conspicuous when grown in a mass. The bulbs are very cheap and where cut flowers are in great demand it should be grown largely. *L. concolor* is one of the smallest flowered lilies, color scarlet, and it only grows about a foot high. It is a beautiful little lily and should be in every collection. *L. excelsum* (sometimes called *testaceum*) grows about four feet high and has drooping fragrant buff colored flowers. This is a fine lily but one that is sometimes hard to grow as it is subject to the lily disease and hard to keep clean. *L. Brownii* is one of the choicest lilies we have. It does well with us and flowers freely, growing about three feet high. The flowers are large, trumpet shaped, white inside, outside brown. *L. croceum* is a vigorous growing lily with large orange-colored flowers, dotted black. An old lily but still one of the showiest. *L. Batemannii* grows about four feet high and has rich glowing apricot-colored flowers. A very beautiful lily. *L. martagon dalmaticum* catani is a tall, vigorous growing lily of great beauty, the flowers a deep, rich velvety crimson, nearly black. We still have a great many lilies to flower and they will last till well into September.

Mahwah, N. J.

DAVID FRASER.

LILIUM ELEGANS VAR. ERECTUM.

Unfortunately the number of species of the lily family that take kindly to ordinary garden culture is limited. In the *Lilium elegans* group we have as sturdy a race as the old fashioned tiger lily, which they resemble somewhat in color. Sometimes some of the forms are catalogued as *L. umbellatum*, more often in the American catalogues than those of Europe, and were at one time generally classed as *Thunbergianums*.

Among the stronger growing forms are the varieties *erectum*, growing 2½ feet high, "Grandiflorum," 2½ feet, flowers scarlet and orange; "salmon," of the color its name indicates, and growing only one foot; *Bilgicatum*, dark blood red; *punctatum*, light red, spotted.

The flowers of all are erect, cup-shaped, well opened, and range in number from one to seven. They will grow in almost



LILIUM ELEGANS VAR. ERECTUM.

showy; a good plant to cover unsightly places as it will grow most anywhere. *Oenothera Lamarckiana* is one of the best and showiest of the evening primroses. It forms quite a bush, covered with its large cup-shaped yellow flowers. It should be grown from seed each year and when once you have it in the garden it is there always, as it seeds itself so freely. *Campanula carpathica* is a dwarf form of the bell flowers and blooms freely. It makes a good edging to the perennial border. The colors are blue and white. *Lathyrus latifolius* (everlasting pea) is a showy, easily grown plant that should be in every garden. It flowers very freely and grows about six feet high. It needs brush to climb on, and is seen at its best when grown in a clump. The flowers are red; the variety *alba* has pure white flowers and is very choice.

Lythrum salicaria is a rough growing plant with long spikes of rose-colored flowers. This is a good plant to naturalize as it will grow most anywhere. It is also good for cutting. The Japanese irises have not done so well this year, owing to being lifted and divided last fall. It always takes such plants as these a year to get established. *Iris Monnieri* is the last of the irises to flower. It is a tall growing species with bright yellow flowers of large size. Pentstemons in great variety of color are now making quite a show. We raise them cuttings

most everywhere. *Sedum Aizoon* grows about nine inches high and bears broad heads of yellow flowers; a good plant for dry places. *Delphinium chinense* is one of the smallest of the larkspurs. It has finely cut foliage and large open panicles of blue flowers. This is one of the best delphiniums for cutting and should find a place in every garden. *Spiraea palmata* is one of the showiest of the whole group, the large heads of crimson flowers making it quite conspicuous. The perennial phloxes are now beginning to flower but it will be a week or two before they are their best. Some of the early flowering *P. suffruticosa* have been in flower for some time. They are of a dwarfer nature than the late flowering ones and are very desirable as they come in handy for cut flowers. Hollyhocks are making a good display but they are not yet at their best. We treat them as annuals, raising a new stock each year. With us the disease of the leaf is very troublesome, and this is the only way to keep clear of it. The seed should be started early so as to get good strong plants before winter sets in. *Achillea ptarmica fl. pl.* will bloom from now on till cut by frost. It is a good plant to grow where cut flowers are wanted. The flowers are small, double white and carried in dense heads. *Mimulus cardinalis* is now flowering freely. This plant is not hardy, but if sown in January and kept



THE PERENNIAL YELLOW FOXGLOVE.

any situation, except one where the water stands in winter. They seem to do equally as well planted in among *Hydrangea paniculata grandiflora*, where abundant water is supplied during the summer, as in the cutting grounds where only the ordinary moisture is given. In the hydrangea bed they bloom, and are cut back to within a foot of the ground by the time the growth of the shrubs want the space their upper foliage and flowers occupy.

In the wild garden at the edge of the ravine they hold their own pretty well in their struggle with native plants. They are good cut flowers, most of the shades lighting up well at night, especially under the electric light.

The illustration represents a bunch of *L. elegans* var. *erectum* standing in a bowl of wet sand. The bunch had been in the house just a week when photographed, and only one stalk replenished. It opens up each bud in water and foliage and flowers keep fresh a long time. They bloom in June and July. W. C. EGAN.

THE PERENNIAL YELLOW FOXGLOVE.

One of the conspicuous members of the old fashioned English gardens is the common foxglove, *Digitalis purpurea* of western Europe, a handsome biennial varying in color from purple to white. A variety known as *gloxinaeflora* is probably the most showy.

Of late another form has appeared in the catalogues under the title *monstrosa*, which reverses the order of the type in opening a terminal flower first, instead of the lowest, and opening out saucer-shaped instead of funnel-shaped. A specimen in flower has already been figured in GARDENING. As stated, these are biennials and are generally raised in July, carried over the winter under protection, when they bloom the following summer, and as a rule die that fall.

The species illustrated is however, a hardy perennial known as *Digitalis ambigua*, occasionally catalogued as *D. grandiflora* and *D. ochroleuca*. It is a

native of southern Europe and perfectly hardy at Egandale. It grows about three feet high with long spikes of yellowish tubular-shaped flowers. While not as showy as its shorter-lived relative, its hardy nature and perennial character make it worthy of a place in any large collection. It blooms in July and August.

W. C. EGAN.

PAEONIES—TULIPS—LILIES—YUCCAS.

What can I do with pæonies to make them bloom? What exposure suits them best? I admire them very much and have a great many. Some produce a few blossoms, others have not bloomed for years.

Tulips, both single and double, have been a total failure in my garden for two seasons. Formerly they did well.

Lilium candidum and *L. canadense*, growing near each other, failed this year; came up well, but turned brown and died down without budding. *Lilium longiflorum* in same bed have plenty of buds and a few flowers have opened, but leaves are getting spots on them and seem to be dying. Can it be late frosts injured them? Or have they the lily disease? What shall I do with them?

I dug up one *candidum* bulb after the foliage died and found the bulb large and firm. *Lilium roseum* and *L. album* look fine and *L. auratum* looks fairly well. These are some distance from the first named.

Can large yuccas be safely moved? If so what is the best time? Mine are too much shaded.

I have taken your paper two years and enjoy it immensely. It has been of service by telling me what to buy, of whom to buy and how to care for plants summer and winter.

W. K.

The pæonies must have been sorely neglected for a long time. The ground around the roots must indeed be very poor when these roots can not find nourishment enough in it to produce a top

growth strong enough to mature flowers. It is not stated whether they are planted in a bed closely together or singly in clumps, whether they are shaded by overhanging trees or otherwise, nor is anything said about soil or exposure and I find it difficult under the circumstances to answer the question. Perhaps it would be best to give a few hints on their general requirements.

Almost any soil suits them, but it should be deeply worked before planting and well enriched; annual heavy top dressings are of great benefit to vigorous growth and forming of large full flowers; too dry a situation tends to weaken the plants in all their parts; a shaded position is not desirable, though where they have the benefit of sun and light for about six or eight hours a day, good results may be expected. No additional care is necessary and they may remain undisturbed for many years; we have a few large clumps here which were planted more than 20 years ago and they flower abundantly every season.

I have no idea of how large or how old W. K.'s plants are. May be dividing and replanting in a different location and soil would be advisable if they are closely crowded in a bed; or a few of them may be left there undisturbed and the ground around them well enriched with thoroughly decayed manure. If the clumps are growing separately in a border or in the lawn, I should now dig a trench around them without delay, remove the soil entirely, fill in with rich compost and finish with a generous watering. Should it be impracticable to do this on account of neighboring shrubs or other plants, a weekly supply of liquid manure will surely be of great benefit.

Dividing or replanting should not be delayed until late fall; September or the first week in October is a good time. Dig up carefully, do not break any more roots than you can help, wash the adhering soil out in a tub or barrel of water, then cut up into several pieces and immediately replant in the new position which has

been prepared for them; do not cut the old stems entirely off, leave 10 or 12 inches of the tops on. Pæonies will form young roots in fall before frost if so treated, but you must not expect very many nor very perfect flowers for the first season; afterwards they will improve with every year. The crowns should be covered with about 3 or 4 inches of soil and liberal top dressings should be applied in winter, to be forked in and mixed with the soil early in spring.

To the second question, regarding the management of tulips in the garden, an answer may be found in the following: Tulips should be taken up annually after the foliage has turned yellow and not before. They should then be spread out on trays and dried in an airy, shady place. When dry, they must be cleaned and all the young bulblets which have formed on the base of the bulbs should be removed, then they may be placed in shallow boxes or baskets and be kept in a dry, dark but well ventilated room until planting time. Some kinds, especially the later flowering species, may be left in the ground for several years, but as a rule it is advisable to lift them annually, particularly where the flowers have been cut, because removing the flower stems and part of the foliage with them deprives the old bulbs of their proper breathing apparatus and favors the formation of young bulblets at their base, thereby weakening the main bulb more and more every succeeding year.

Florists do not use their bulbs a second year because they cut the flowers with long stems, cutting foliage and all with it; as bulbs are not very expensive, they find it to their advantage to buy a fresh supply every year instead of bothering with the old weak bulbs, though with proper treatment this enfeebled stock would again become vigorous and strong enough to perfect good flowers if grown on for a year or two.

Now for the third question: Your lilies have the disease and it is likely to spread to the other varieties without any warning. I would advise the immediate destruction of all tops and bulbs affected; that the latter appear sound and plump is no indication that the disease has not reached them yet, neither can I recommend a sure remedy. Spraying mixtures of the various descriptions have been tried with but little success generally, though early and repeated applications of them have in several cases acted as a preventive. Lily bulbs of the ordinary species, such as are mentioned by W. K., are quoted very low in catalogues and a new healthy supply can be procured at a very small cost. We had the same trouble here on moist or wet and imperfectly drained land but never on higher and more open and sandy ground. A row of about a thousand *Lil. candidum* was entirely destroyed last year by this disease, while others in an open sandy loam have flowered well for years. *L. longiflorum* and *candidum* are more liable to be attacked than the *speciosum* varieties, but the disease may spread to them also, even if they are planted some distance away.

Fourth: Large yuccas may safely be transplanted in early spring, before growth begins, if only ordinary precautions are taken to retain a little ball of earth around the roots. Should the soil be loose and fall off while moving the plant, the roots at least should be preserved as much as possible and after planting firmly in the new home, a thorough good watering will help the plant in re-establishing itself. Protection



YUCCA FILAMENTOSA.

from sun and wind for a week or two will also assist in retaining the old foliage. I have never known such a plant, large or small, to die after moving, though when planted carelessly they may drop some of the old foliage. K.

YUCCAS.

Yuccas are most useful plants, both for the decoration of the lawn and of the greenhouse, filling a place that no other plant could occupy. Of those hardy in the north, the *angustifolia* and *filamentosa* are the best known. Another, *gloriosa*, is not as hardy as the others, though quite so in Philadelphia.

Of the three named *angustifolia* is the first to flower. At the present time, June 7, its panicles of flowers have almost completed their growth in height, while that of *filamentosa* is but just showing above the foliage. The flowers of *angustifolia* are not of as good a white as those of *filamentosa* and as its foliage is narrow, it does not make as good a display when in bloom as the other does.

Filamentosa is so well known as to be familiar to most every one, but to those who do not know it the cut of it which is herewith presented will show what a beautiful thing it is. As with all yuccas when it flowers it ends that particular shoot. Younger ones take its place, and when once a plant has become established in a certain position, forming a good clump, there are usually one or more panicles of flowers every year. Should any one wish to increase his stock a small plant can be taken off from the old stock or even a piece of root, and it will make a nice plant. Seeds are also produced, which grow freely sown in spring.

Yucca gloriosa is an arborescent species and a grand one where it is hardy. As already stated it is entirely hardy in Philadelphia. It is with us very late flowering, and on several occasions I have seen its attempts in this way frustrated by freezing weather catching it in October. But last year was an exception, the frost coming late, and it perfected its flowers nicely. In the south of England it is a great favorite, and it is not uncom-



YUCCA GLORIOSA.

mon to see specimens 10 feet high, and well branched. I think it probable that this species would thrive still further north than this if protected a little for a year or two after planting, and if strong plants were set out at the start. South of this it does splendidly, and is justly valued for its beauty.

Yucca filifera is a greenhouse plant in the north, being a Mexican species. As will be seen in the illustration its club-like inflorescence is in a drooping panicle, while those of all the others mentioned are upright. Not only is the panicle somewhat club-shaped, but the growth of the plant partakes of the same character, quite unlike the other yuccas in this respect.

Corresponding with P. J. Berckmans last year, about yuccas, and mentioning that *gloriosa* was hardy here, but that *aloifolia* had not proved so, he expressed some surprise at this, as he deemed the latter the hardier of the two. This spring he kindly sent me for trial some good sized plants, one each of *aloifolia* and its variegated and tricolored varieties, as well as some *gloriosas* of a variety which he thought was an earlier blooming kind than the one I have. I hope the *aloifolias*

will live, but regret to say that of a dozen two year seedling plants left out of doors last winter slightly covered with leaves, but one is now alive, and this one was killed to the ground. JOSEPH MEEHAN. Philadelphia.

HARDY LARKSPURS.

There is a long list of species and varieties of perennial delphiniums, blue in various shades being the predominating color, and we have but few plants which adapt themselves so easily to such varied conditions of soil and surroundings as these larkspurs. They may be grown among low, early flowering shrubs or in front of a shrubbery, and do equally well when planted in beds by themselves or intermixed with other hardy plants. Mingled with rhododendrons, hardy azaleas, kalmias or pæonias, they assist greatly in keeping up a cheerful and gay appearance of the bed. Planted among various kinds of lilies their luxuriant foliage keeps the ground shaded and cool for them during the hot summer months, though the flower stems of some of the species grow rather taller than most lilies and in planting we should first consider the height of both.

D. elatum or *exaltatum* is a tall and robust grower, five to seven feet; the flowerstems, which sometimes are branched on the lower part, are upright and straight, terminated by densely crowded racemes of good sized flowers. In color they vary greatly, some are very dark blue, others very light, almost white, but all are beautiful. Many named varieties of special merit are grown, though for ordinary purposes good seedlings will answer as well. Seeds sown early in spring will produce flowering plants the first year but bloom later than old clumps; the first season's growth is never as tall as it will be after the plants are well established.

D. chinense or *grandiflorum* is much dwarfer than the first named and hardly ever grows more than two feet high; the stems have many lateral branches and are loosely set with large flowers ranging from pure white to deep indigo blue, the paler varieties being usually admired most. Young seedlings will bloom from August until frost. *D. mesoleucum* is bright shiny blue with a clear white center; it produces erect branched pyramidal racemes from three to four feet in height and is one of the showiest of all. *D. formosum* resembles the last named but is deeper in color and not quite so tall a grower. *D. hybridum*, another of the tall growers (four to six feet) has densely crowded, branchy racemes, ranging in color from light blue to very dark indigo; is one of the best for ordinary purposes and also one of the most effective species.

D. cashmirianum forms a spready bush, one to one and one-half feet high, is very free flowering, the stems are many branched and have not the pyramidal shape of the rest; the flowers are very large, many of them two inches across the opening, color blue with a peculiar purplish tinge; coming from the western Himalayas, we doubted the hardiness of this lovely species, but time has proved that it is as hardy here as any of the rest. *D. cardinale* is scarlet shaded yellow, well known to everybody who has been in California, its native country. A great improvement on this species is the rarer *D. nudicaule*, the only pure bright scarlet delphinium in the list; dwarf and compact in growth it sends up its branchy stems to a height of fifteen to twenty-four inches; the racemes are not crowded and the distinct shape of every individual flower is plainly visible. No other species is so brilliant in color and every garden should have a few specimens of this unique and deserving plant.

It is generally very difficult to raise the young plants from seed; division is the surest way, but as the roots are very slow in the production of side shoots, propagation is slow work and the plant is therefore comparatively rare, though in commerce for twenty-five years or more. A newer and still rarer plant is *D. sulphureum* (Zalil), bright sulphur yellow in color and with large flowers, fully one inch across. It has not been tried sufficiently here to warrant an expression of opinion, yet the plant is highly recommended all over Europe.

Few herbaceous plants can be named which are more effective in parks or large gardens than the taller growing delphiniums. Their brilliant colored flowers can be seen from a great distance when planted in large masses; for the borders in smaller places they are indispensable, for some of the species will flower early and late, but I should repeat here that we can prolong the flowering season of the older plants until frost if we will take the pains to remove old flower stems, or parts of

them, as soon as the flowers have faded; new growth and new stems will then come forth, furnishing us with a succession of bloom until severe cold weather sets in.

As to soil they are not fastidious. They do equally well high and moderately dry or in moister positions, though in very stiff clay, on low places, perfect drainage should be provided. After four or five years the clumps should be taken up and divided or else they may be thinned out by removing each alternate plant to give more room for those remaining in the bed. Annual and generous manuring will greatly encourage vigorous growth in all parts of the plant, mulching during the hot summer months also has a beneficial effect on the size of the racemes and the lasting quality of the flowers. The best time for dividing is early in spring when vegetation is just beginning. If for some reason fall is chosen for the operation the safest way is to cut down the plants just above the ground in September and then wait until the end of the month, when new growth will begin to develop. The clumps are then ready for division and the roots will have ample time before frost to take hold in the ground, yet it is always best to provide a winter covering for fall planted stuff to prevent heaving out.

The delphinium is one of the few hardy herbaceous plants which have not been entirely neglected by our florists, perhaps principally because the flowers are useful for cutting and most of them are easily raised from seed. The frequent sowings have resulted in a great many hybrids and mixtures between the leading species, so that it is often found difficult to tell which class they belong to. Special names have been attached to a goodly number of these seedlings whenever they showed some peculiarity in coloring or otherwise. Improvement is going on in size of flowers as well as in length and fullness of racemes. Double varieties have been raised of several species; some of these are very handsome, though the singles are preferable for general use in my opinion.

Rochester, N. Y. J. B. KELLER.

MIDSUMMER FLOWERS.

One of the most useful flowers of late July is the common trumpet vine. It exists here in three sorts, *radicans*, scarlet; *Thunbergii*, crimson; and *grandiflora*, orange. The first two are natives; the last comes from China. A mistake is made in not planting these on lawns as shrubs, as they may be called. Set a vine anywhere, drive a stake by it, of about five feet in height, to which tie the vine as it grows. When the stake has rotted away the vine will have a woody stem which will support itself, and the "shrub" is made. The few to be seen occasionally are most beautiful when in flower as they are in the latter part of July and through August.

Even the wild honeysuckle, *sempervirens*, is not always the best planted when set to a trellis. Supported for a while as recommended for the trumpet vine it forms a pretty, tangled clump, interesting and charming to look on. The newer honeysuckle, *fuchsoides*, which is nearly out of flower by the time the first of August comes, has rich, rosy scarlet flowers. It is in the same class as *sempervirens*, and like it is as pretty when let ramble about a stake as in any other situation it can be placed.

Everybody has heard of the Scotch heather, but many persons are not familiar with the plant. An occasional plant is met with in gardens here. There is no

reason why many of them should not be seen, for it is entirely hardy and easy to grow. When bushes of two to three feet in diameter are seen full of bloom it is a sight pleasing to everyone. Individually the spikes of flowers are not showy, but when hundreds of them are together the whole makes a matchless picture. The neat foliage well sets off the violet purple flowers. Two other heaths flourish with it out of doors here, *Erica vagans* and *E. stricta*. The former has cream-colored flowers, but the brown stamens which project from them, give the appearance of two colors to them. *Stricta* has rosy purple flowers. All of these heaths are of delicate beauty, both of foliage and blossom, while being quite hardy.

Viburnums are known as being among the most valuable of ornamental shrubs. But there is one species, the *Lantana*, which deserves a great deal of praise for its uncommon beauty at this time. It is ripening its fruit now, July 7, and the lovely appearance of the bunches calls forth the admiration of all that see it. In early spring its beauty starts with its large flat heads of white flowers. As these disappear, berries take their place. About the close of June the green color of the fruit gives way to white, later on the white to red, and the red to black. If every berry on the one bunch changed at once it would be pretty, but it does more than this. Often there are white, red and black ones on the cluster at the same time. It is an English shrub and, though known in catalogues as *Viburnum Lantana*, is called by many the "wayfaring tree." A newer viburnum, *Sieboldianum*, is also making a good display of pretty berries and besides this and its white flowers in spring, it is very nearly evergreen.

It is not possible to have a complete collection of beautiful summer blooming shrubs without the *Pavia alba*, better known as *P. macrostachya*. It is a native shrub, which makes a rather flat growth, and which in gardens is usually seen of a size from four to five feet, though it gets as large again in time. From the flattish surface of foliage arise numerous spikes or racemes of white flowers, and from the center of each flower there project numerous long red stamens. A bush given room to develop is certainly the prettiest of all shrubs in mid-July, which is its season of flowering with us.

Philadelphia. JOSEPH MEEHAN.

GENTAUREA MARGUERITE.

If some of the readers of GARDENING will tell us how to grow this beautiful flower successfully they will be doing good missionary work. I confess to an inability to bloom the plant well. I have sown the seeds where the plant is intended to bloom, and have started them in the hot bed. I have planted them in several conditions of soil and situation, and yet just as the plants are ready to bloom they die back. The nearest success I have yet met with is where I transplanted to a mound of rough yellow clay loam, thrown over a cistern to prevent winter freezing. In this situation, receiving no cultivation, or artificial watering, and allowed to grow as a weed, the one plant tried does fairly well. There must be some way to bloom it. Let us know how.

W. C. EGAN.

OSMUNDA REGALIS—PLANT NAMED.

Replying to B. S. N., *Osmunda regalis* is no doubt hardy in your locality as it is one of the most widely distributed of our native ferns. Here in Chicago it is

native and perfectly able to endure the winters but requires considerable moisture and should be somewhat shaded from the scorching summer heat; a northern exposure will suit it best. *Osmunda Claytonia* L. is a superb fern and seems to bear transplanting well. It is, by far, the most beautiful of all the osmundas.

Your wild flower, as well as can be judged from the specimen, which has lost every trace of color, is *Pogonia ophioglossoides* Br. (arethusa of L.) a native bog orchid ranging from Canada through New England to Carolina and Kentucky. It is an interesting plant with a pretty, sweet scented flower. It would have to be treated as a bog aquatic; about the same conditions as required by *Sarracenia purpurea*.

Parks.

THE IDEAL PARK SUPERINTENDENT.

During the last few years the public parks of the west and north divisions of Chicago have been drifting more and more into the control of the politician, and the Horticultural Society of Chicago, feeling that education of the people as to the essential qualifications of the men to be placed in charge of the parks, was necessary to a successful campaign of merit against political influence, requested Mr. O. C. Simonds, superintendent of the beautiful Graceland Cemetery, and a landscape architect of more than local reputation, to prepare and read at a regular meeting of the society a paper on "The Ideal Park Superintendent." The paper was read at the quarterly meeting of the society held Saturday, July 10, and was printed in full in the Sunday issue of one of the leading dailies, the organ of the political party now in control of the parks. The address was listened to with marked attention and was received with hearty applause.

Mr. Simonds spoke as follows:

"It may seem presumptuous for one who has never been a park superintendent to attempt to give the qualifications needed for such a position. Undoubtedly practical experience would add to one's ability to speak with authority on this subject, but I may claim such ability as comes from being engaged in a similar calling—from having great admiration for parks, from visiting many such institutions, and from studying what has been written on landscape gardening as well as the actual landscape effects.

"When Mr. Egan asked me to prepare this paper he enclosed a slip on which was written: 'What are the qualifications for an ideal park superintendent? As the ideal combination can probably never be found in one man, which qualities can best be spared? Which are of the greatest importance? What is the relative importance of the various essentials, such as engineering, tree planting, administrative ability, etc?'

SHOULD BE OF GOOD CHARACTER.

"A park superintendent should first of all be honest, reliable, conscientious, gentlemanly—in short, be a man of good character. The people's money, which he spends, should secure the best results for the people. If it goes for material it should be for the best quality and the greatest quantity that the amount expended will command; if for labor, the work done should correspond with the wages paid. But all this is so generally admitted, and is true of so many other



YUCCA FILIFERA.

callings, no time need be spent in its demonstration.

"Next to good character comes a knowledge of what a park should be. A superintendent should know for what purpose the thing he superintends exists, what should be its leading features, and how these can be preserved or attained. He should know that a park exists, primarily, for its beauty, for its varied scenery, for its contrast with city streets, and for the rest, the recreation, and the pleasure that is given by this beauty with all its various modes of expression.

"In some cases the superintendent is also the designer, and then he should know the general plan of the park is of more importance than any single feature. If a building is to be erected it should not be placed where it will cut off an important view; if a tree is to be planted it should stand where it will improve the landscape rather than where it will compete with other trees; if a road is to be made the superintendent should know, first, where to place it and then how to construct it.

ARTIST AND ENGINEER.

"If he cannot have both kinds of knowledge he should have the first, and get some one else to build the road, since there are a dozen who can answer the question 'How' to one that can answer the question 'Where?' If there is grading to do he should undertake it with the feeling of an artist rather than an engineer, since the shaping of park surfaces is more nearly allied to sculpture than to the building of railroads. If people give a monument, a fountain, or a relic of any kind and it must be accepted, he should know how to subordinate it to the general effect desired.

"But in most cases the superintendent will be required to carry out the design furnished by some one else. Even then it is important he should know something of the principles of design and should have a knowledge of trees, shrubs, and flowers, with their various requirements; he should appreciate the value of large open spaces and varied outlines; he should know what constitutes a good road, when it has good lines and proper con-

struction; he should know how to make the border of a lake appear natural and interesting.

SHOULD UNDERSTAND LANDSCAPE GARDENING.

"To put the whole matter briefly, a park superintendent, in order to fulfill his duties in a satisfactory manner, should have some knowledge of landscape gardening. This is just as important as it is for a man who conducts an orchestra to have some knowledge of music. The conductor may not be able to compose an opera, but he should be able to appreciate a good composition; and putting a man in charge of work required to maintain and create beautiful scenery who has no special knowledge of landscape art would be like asking a man who cannot beat time or tell one tune from another to act as leader for an orchestra.

"It is, to be sure, an advantage for a park superintendent to have some knowledge of engineering. He should know how to put in drains, water pipes, build roads, walks, and do all the various kinds of engineering work usually needed in the construction of a park. He should also know how to prepare the various plats and records of such work that may be needed for reference.

"I believe this knowledge can be gained by the person who has also the desired acquaintance with landscape gardening, but if the superintendent is to be deficient in either line the deficiency can be most easily supplied from other sources if it is lack of knowledge of engineering.

SHOULD BE IN LOVE WITH HIS WORK.

"The ideal park superintendent should be thoroughly in love with his work. I have known a number of such men. One had charge of a large tract of land, which was really a public park, although it was not called such, and was not managed by a City Council or by park commissioners. I remember visiting him many years ago; he would call my attention to bits of scenery, the border of a lake, an undulating lawn, or a distant group of red pines, by reflecting them in a mirror which he carried for this purpose, and which framed in and separated the view in question or the picture being examined. He showed these views with as much pleasure as a mother would exhibit in showing her baby.

"Again on going to see him early one morning, I found him greatly interested in a ravine drive. He had actually been laying an important drain with his own hands. On another occasion, at his office, he took great pleasure in showing his various books which treated of landscape gardening and birds. I know another superintendent, who is still living, who for many years was in the employ of the late Henry Shaw of St. Louis, and who still looks after Tower Grove Park, who shows as much interest and affection for his lawns, trees, shrubs and lilies as a parent would show for a child.

HIS POSITION SHOULD BE SECURE.

"But this deep interest, which is so essential for producing the best results, cannot be expected from a man whose position is insecure; from a man who may be discharged when the other party gets in power. The ideal superintendent should expect to spend his life with the park he cares for. The park is to continue for generations. Many of the effects desired will require years of growth for their production.

"It takes time for a man to become acquainted with the various features of even a small park, so the one in charge should have no fear whatever of being



BELT OF LONICERAS IN THE ARNOLD ARBORETUM, BOSTON.

replaced by another man; his whole thought should be given to the park, and, moreover, since he is responsible in a large measure for the manner in which the park is conducted, he should have absolute control of all the employes of the park—the laborers, gardeners, policemen, etc. He is called upon to make estimates of what certain work will cost and then is required to execute the work. It is unfair to him to require him to use men hired and controlled by some one else.

"In the selection of employes he will satisfy himself in regard to an applicant's ability to do a needed work, but will not inquire as to his nationality, his religion, or his politics. The fact that a man is a Buddhist, Presbyterian, or agnostic would probably not interfere with his doing a good day's work at mowing grass.

ABSOLUTE CONTROL OF EMPLOYEES.

"The superintendent should have authority to discharge at once any man who showed no interest in his work; who worked rapidly when someone was looking at him, but rested most of the time when he thought himself alone; who talked too much with his fellow-employes, or attempted in any way to make them discontented.

"The ideal superintendent would in time become acquainted with all the workers in the park, and take some interest in them aside from securing the greatest amount of work for money expended. A word of explanation now and then, calling the attention of a mere laborer to the beauty of a tree or shrub; the statement of an interesting fact in natural history; or possibly a bit of political economy, would give the workman food for thought, and help to deprive his labor of a little of its drudgery.

"On the other hand, the superintendent can often help to educate the Park Commissioners, or, if fortunately one of the commissioners should be a man of good taste the superintendent should show a readiness to learn and profit by any advice that may be given.

"But, although the ideal park superintendent will have an intimate knowledge of the design of the park and be brought

in close relations with the Park Commissioners and with his fellow-workers, his greatest influence will come from his relation to the public. The park exists for the residents of a city and those who come to visit them. It is a place where people go to get fresh air, to see an expanse of sky and clouds, and lawn and meadow, to see foliage and flowers, to get sweet perfumes, and to hear the music of birds.

"It may be conducted in such a manner as to exert an elevating influence on all who go to see it, to teach them to respect others' rights, to show them what is in good taste, and to give them the purest kind of enjoyment. In the domain of landscape art it should take a leading position, keeping up with the best thought of the times. Its treatment should be simple and natural, and not accompanied with grotesque features which deprave people's taste.

"The man in charge of a public park has an opportunity to exert an influence which should place him on a level with the leading ministers, doctors, and other professional men of the present time."

Roses.

NOTES ON ROSES.

At this writing, July 1, the roses are still making a good display, although they are not nearly so good as they were two weeks ago. This has been a splendid season for them and they never did better or looked so well. All the different classes have flowered well. In the H. P. class we had a fine show and in great variety.

Among the best of them were Madame Victor Verdier, crimson; Pride of Waltham, flesh color; M. P. Wilder, carmine; Baroness Rothschild, light pink; Fisher Holmes, deep glowing scarlet; Madame Gabriel Luizet, pink, like Baroness Rothschild; Earl of Dufferin, rich crimson; Ulrich Brunner, red; John Hopper, bright rose; Prince Camille de Rohan, deep velvety crimson; Mrs. John Laing, pink;

Paul Neyron, deep rose color; Alfred Colomb, crimson; Francois Levet, cherry red; General Jacqueminot, crimson; Lady Arthur Hill, lilac rose; Charles Margottin, red; Anne de Diesbach, carmine, and Magna Charta, pink.

Among whites the Marchioness of Londonderry was the finest. This new rose is all that could be desired. The flower is very large, pure white, and lasts well. The plant is a vigorous grower, although with us the budded plants were cut to the mulch line the past winter while the plants on their own roots came through all right, and both are growing side by side. Another promising new white rose is Margaret Dickson. The flowers are not so large as the last named, but it is in every way a grand rose and a vigorous grower. The color is white with a pale flesh center; it is also very fragrant. These are only a few; the list could be greatly enlarged, but all the roses mentioned are fine and good vigorous growers.

The moss roses are mostly all vigorous and free flowering. Among the best ones with us are Henry Martin, pink; Princess Adelaide, bright rosy pink; Luxembourg, crimson scarlet; and Countess de Murinais, white.

Among miscellaneous roses none has been more showy than Climbing Jules Margottin. This we train to grow in bush form and the wealth of bloom it gives is wonderful. The color is red.

The hedge of Madame Plantier roses that encloses the cottage garden was a beautiful sight. This is the freest flowering white rose anyone can grow, but it does not last long in perfection. The *rugosa* roses have also flowered well. Madame G. Bruant is a beautiful white lately introduced. It flowers in clusters but only one flower opening at a time. The bud is long and pointed and the flower semi-double. The foliage is clean and handsome and it is a vigorous grower. The *polyantha* roses are a fine flowering class, the flowers small, but as they come in clusters this makes up for it. One of the best is Clothilde Soupert, white. This flowers so freely that the little bush is almost hidden.



LONICERA MORROWII.

Crimson Rambler is now in all its glory. An arch of it in the garden is making a grand show and what a beautiful rose it is! It proves quite hardy with no protection with us and is a strong vigorous grower, sending up shoots nine to twelve feet high. It is easily propagated in the fall and a stock can soon be gotten up in this way. They can be wintered over in a frame.

The standard roses have also done well and flowered freely. The hybrid teas are giving quite a few flowers but quite a number of them were winter killed. Kaiserin Augusta Victoria and Duchess of Albany seem to be perfectly hardy and flower very freely. DAVID FRASER.

Mahwah, N. J.

A NEGLECTED ROSE.

Philadelphians of a quarter of a century ago who knew anything of roses were well acquainted with the white *microphylla*. And, indeed, it has not lost fame yet, being often inquired for, and but that florists have neglected it for newer, but not always better, kinds, there would be a good demand for it to-day.

Rosa microphylla exists in single pink and single white sorts and in a double white one, and it is of the latter kind I wish to write. It was the favorite rose for cemetery purposes, and being of a half climbing nature, it was often used for training about the enclosure of cemetery lots, as well as for planting as single specimens. The bright shining green leaves are much like *Wichuraiana* in size and color. As in most all cases of roses of a climbing nature, the flowers are from the wood of the previous season, a fact to be remembered when pruning.

This beautiful double white rose flowers in this vicinity about the close of June, later than most other sorts. It is a dis-

tingent species, a native of China, and as with most of those from that country, it is perfectly hardy in this locality.

While this lovely rose is not usually classed as a climber, it can very well be used as one. It makes vigorous shoots, which increase its height many feet each year, so that it does not take a great while for it to reach the top of a porch or other structure such as roses are usually planted to. When the white buds are about expanding, well set off by the shining green foliage, it is exceedingly pretty. Philadelphia. JOS. MEEHAN.

Trees and Shrubs.

PRUNING LATE BLOOMING SHRUBS.

The excellent article on the pruning of trees in a late number of GARDENING leads me to say a few words on the pruning of late blooming shrubs.

The usual directions given for the proper pruning of shrubs are to prune the spring flowering ones as soon as their flowers fade, and the late flowering ones in winter. As a rule these directions are correct, but there are many shrubs which flower at midsummer, and these puzzle many a one as to which class they belong to. Summer spiræas may be mentioned as representing the class referred to. As a rule these are treated as belonging to the spring flowering class, and are not pruned in the winter. My experience leads me to say with certainty that they may be placed in either class, at the pleasure of the owner. When treated to a winter pruning, the flowers are very much finer than otherwise. Recently it was my good fortune to see a row of *Spiræa callosa*, large plants, which had

been cut down to the ground last February. Strong shoots had pushed up to about four feet high, each one terminating in an immense flat head of its pink flowers. The display was a grand one. Had these been treated as spring blooming shrubs are, viz., a pruning after flowering last July, there would have been more heads of flowers, but each head would have been of much smaller size. Other spiræas of the same character which occur to me as I write are *Bumalda*, *Bilardi*, *paniculata* and *Regeliana*. In my own case I would have no hesitation in cutting these and all similar shrubs closely back, assured that my reward would be in larger heads of flowers.

Besides spiræas, the following shrubs are in the class indicated: *Budleia intermedia*; Verbena Shrub, caryopteris; Sweet Pepper bush, clethra; *Colutea arborescens*, althæas, hydrangeas, hypericums, potentillas and Chaste Shrub, *Vitex agnus-castus*, and I am not sure but that the handsome *Viburnum nudum* would behave well under this plan.

Another advantage besides that of large flowers to these well cut back bushes is this: If as soon as the first flowers fade the head be cut off, other heads, though smaller than the first, will appear, coming from lower down the stem; and in this way, on some spiræas flowers are to be had till summer closes.

Philadelphia.

JOSEPH MEEHAN.

LONICERA MORROWII.

Among the bush honeysuckles, which almost rival the lilacs in effectiveness as early bloomers and are not excelled in beauty when in fruit, *Lonicera Morrowii*, the subject of our illustration, is one of the most desirable on account of its graceful habit and symmetrical form. The flowers are blush white and very abundant.

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE NEW *Rudbeckia laciniata* "Golden Glow" is a moisture loving plant. It will soon be in bloom. A good watering now and then will help it.

THE common sweet briar grown to a single stem eight to ten feet high, and supported by an iron rod, is very effective when in bloom or in berry.

THE NEW ROSE President Carnot is proving to be a splendid summer bloomer. Some of the stock sent out is budded high on *Rosa canina*, so look out for wild growth.

WITCH-HAZEL.—Replying to J. R. C the extract of witch-hazel, or hamamelis (often called Pond's extract) is prepared from the bark of *Hamamelis virginiana*, a native, and probably the one you have on your grounds.

CLEMATIS Madame Edouard Andre is nearly as free a bloomer as Jackmanni and of which it is a hybrid, and seems as free from disease. It is not, however, as tall a grower. This clematis was introduced to this country at the time of the World's Fair, where a few plants in front of the woman's building attracted considerable attention by the carmine red of its flowers.

THE California crop of sweet pea seed, now being harvested, shows a considerable shortage owing to a somewhat unfavorable season for sweet peas.

DON'T FORGET to start your biennials soon for next year's blooming. Foxgloves, Canterbury bells, mulleins, etc. At the same time start some new perennials. They can be tended to at the same time and you thus add to the list of your garden friends at but little cost.

THERE is but little difference in the size and appearance of plants of Semple's asters sown under glass and transplanted and those sown out-doors and transplanted. The former may bloom a few days earlier. Moral, save the hotbed space for other material.

IN 1895 and 1896 some *Lilium candidum* that were badly diseased were taken up about the middle of July and soaked for six hours in a solution of sulphate of copper, one ounce to one gallon of water. They were then most thoroughly washed with the hose and at once planted. All seem free of the disease this year, and over four-fifths bloomed.

DELPHINIUM CHINENSE is a charming garden companion, greeting us in many colors ranging from the purest clear blue through all its shades to a creamy white. It is not a strong grower, being even under good cultivation but three feet high. It commences blooming in July and continues some ten or more weeks. It is a good cut flower and when the deep blue form is used in connection with *Coreopsis Drummondii* the effect is elegant.

THE Nomenclature Committee of the Society of American Florists wishes information of any cases of misnaming, renaming or nomenclature entanglements relating to decorative plants handled by the American trade, that they may be incorporated in its report to the society at the meeting in August. Reports should reach the committee by August 1. Prof. Wm. Trelease, Director of the Missouri Botanical Garden, St. Louis, is chairman of the committee.

WE HAVE received from H. H. Berger & Co., New York, a copy of their book of colored plates of Japan lilies, thirty sorts, all life size. It is certainly a work of art and of very great interest. The rare varieties of the *auratum* are of remarkable beauty. Evidently Japan supplies many beauties in plant life with which we are yet to become thoroughly familiar. Messrs. Berger & Co. also send us native Japanese paintings on rice paper of amaryllises, all of which are very beautiful and will undoubtedly prove valuable. The price of the book of lilies is \$2 50.

THE WORK of extending and improving the Missouri Botanical Garden, St. Louis, is now actively under way. An addition of one hundred acres has been made and is now being laid out in accordance with plans prepared by Frederick Law Olmsted. At present the number of specimens in the garden is about 5,000 and the addition will bring the total up to about 25,000, the plans contemplating an entire remodeling of the garden. When completed the Missouri Botanical Garden will rank with the famous botanical gardens of the old world. Prof. Wm. Trelease is director.

WINTZER'S NEW CANNA "Gloriosa" is an acquisition. The plant is very dwarf but still a strong grower, thus promising a

continuity of bloom. The spike is large and full, the flowers a rich crimson strongly bordered with yellow. It is one of the coming cannas for the outer border. Brilliant, another canna of his 1897 set, is promising well. The three larger petals are a pure yellow in color, very slightly dotted with crimson, the dots so small as not to be noticeable a few feet away. The small drop petal is a crimson at the base, gradually developing into stripes on a yellow ground. The effect at a distance is that of a yellow canna. So far the yellow stands the sun remarkably well. California is the best pure orange yet produced, and is a free bloomer.

THE BLISTER BEETLES, both black and striped, are especially fond of *Clematis paniculata* and *C. graveolens*. They are early risers and hungry for breakfast. Appearing suddenly in swarms it does not take them long to defoliate large plants. They multiply rapidly and soon after their appearance, therefore it is best to fight them at the start, which is best done by shaking them into a wide pan containing some water and kerosene oil. The oil floats on the top and is death to the bather. The ordinary poisonous insecticides dusted on the leaves have but little effect. A strong spraying with a hose will drive them into your neighbor's garden but the said neighbor soon learns the trick, and after they have increased in numbers, he gets out his hose and returns them to you with compound interest, therefore it is best to kerosene them. They are apt to appear immediately after a hot spell late in June or early July.

The Greenhouse.

ERICA CAVENDISHII.

Among the erica family proper, are to be found the gems of the floral kingdom. There are probably less insignificant species, especially hybrids, in this genus than in any other genus of the same magnitude, therefore it is no easy task to single out one variety eclipsing all others for its superior majesty and beauty.

Personally, outside this noble *Erica Cavendishii* I would be inclined to award the superior beauty to some one of the *ventricosa* section of the genus, but the uncommon color obtained in the flowers of *Cavendishii* commands respect and admiration at once and therefore it can be given without hesitancy the premier position in the heath family for gorgeousness, its rich yellow flowers associating well with its light green foliage. Contrary to what might be supposed from the unusual color already mentioned, it is not difficult to grow, but is among the easiest, and is one of the most robust of the greenhouse varieties.

A cool temperature ranging from 38° to 45° at night will suit them perfectly. The soil best adapted for ericas is good fibrous loam and peat, not muck from swamps, but upland peat found on the mountain side; they can be successfully grown, however, by the substitution of good leaf soil, which partakes more or less of the nature of peat, and therefore ought to be liberally supplied in the soil, with an addition of a good quantity of clean sharp sand.

They must be carefully watered at all times, never allowing them to become dust dry to cause wilting, for they will refuse to recuperate from such treatment. Water over-head in the shape of syring-



ERICA CAVENDISHII

ing is more injurious than otherwise to most ericas, and ought not to be practiced except when insect pests appear on the scene, which is seldom if they are kept in their proper atmospheric element, as the atmospheric conditions suitable to ericas are very uncongenial to thrips or red spider.

There is, however, another dreaded pest which attacks heaths, and that is mildew. The circumstances that make heaths liable to this disease are an over-moist and stagnant atmosphere, also cold draughts blowing directly on them from the ventilators. The remedy for this evil is to dust the affected parts with flowers of sulphur and sweeter and drier surroundings.

Erica Cavendishii will make larger plants in a comparatively small pot, consequently it ought not to be overpotted; but it should never be allowed to become badly pot bound for in this condition it will not take kindly to a new shift, the small slender rootlets rebelling against entering the new soil from their matted state; this is characteristic of most all hard wooded plants.

Kept in the temperature recommended above it would come in flower naturally at Easter and keep in good shape for six weeks or more in a semi-moist situation.

K. F.

SUPERINTENDENT F. W. Taylor, of the horticultural department of the Trans-Mississippi and International Exposition, to be held at Omaha, Neb., June to

November, 1898, is making strong efforts to have every division of horticulture well represented at the exposition.

The Cold-Frame.

IXIAS IN COLD FRAME.

J. W. Collins, Chicago, asks the following questions in regard to growing ixias in a cold frame: "What kind of soil to use? When to plant? What protection during winter other than a sash? How deep and how far apart to plant? When the bloom may be expected? What treatment after flowering? What situation for the cold frame, sunny or partly shaded?"

A sandy open soil is the best to grow these bulbs in. Have it quite dry when planting. This can be done by preparing the soil some time before planting and putting on the sashes. No manure should be used in the soil unless it is put down a few inches below the bulbs (we use no manure in our bulb frame and have good results). One of the most important points is to provide plenty of drainage, and be sure to have a tight frame, that no mice can get into, as they are very fond of these bulbs. Moles are also troublesome if they once get a foothold, and every precaution should be taken to guard against these pests.

Plant in November and December. If planted too early they may begin to grow

in the fall months, and this is not wanted, as in your cold latitude the frost might get at them. By having the soil in the frame dry the frost will not have so much effect as if the soil was wet. We always bank around our bulb frame with long manure, but anything will do so long as the frost doesn't get at the bulbs. A mulch of hay or straw could be put over the soil, but take it off as soon as the young leaves begin to come through the ground, or it will cause them to bleach and draw.

Plant three to four inches deep and the same apart. If the spring is mild and warm they will begin to flower early in May and last for some time in bloom.

When the plants have died down give no more water, put on the sash so as to shed all rains, but give plenty of air by tilting the sash at the back, or if anything else is wanted in the frame they can be taken up and stored away in dry sand till planting time again.

The frame should be situated in an open sheltered place, that is, sheltered from the north and west winds. In such a situation the covering can be greatly reduced.

There is a multitude of varieties and all are good. It is well to get the choice named varieties, as the mixtures are often poor and the colors near alike. There are many other tender bulbs that can be grown in the same frame, such as the sparaxis, tritonias, babianas and calochortus. The last named are very showy and well worth a place in the frame, but they are not so good for cutting as the ixias.

DAVID FRASER.

Mahwah, N. J.

EARLY STOCKS AND ASTERS.

Last year I sowed asters July 20th in hope of bloom before winter. It was too late, and as cold weather advanced I put them in cold frames which I had already regarded as filled with pansies, still in hope of fall blooming. But they did not bloom; only a few of the most advanced perished from the cold; I think there was light matting over the glass. In the spring the pansies were taken out and the asters left in the frames; they soon filled the space and began to bloom by the middle of May, and are yet (July 1st) blooming freely. The Queen of the Earlys, a fine white aster, flowered early in June from spring sowing, so that we have had asters for cutting since early in May. The experiment was so successful that I intend to sow again and I think that for wintering in frames the first week in August will probably be better than 20th of July.

Late sown Victoria, Perpetual, and fall Cocardeau stocks also wintered well in the frames and began blooming about the middle of April; some of them are still fine, even after the spring sowings have begun and even like the Snowflake, passed out of bloom. The Snowflake has been a very pretty stock, flowering from spring sowing before the first of June. The French autumn Cocardeau, sown in fall, though presenting only three or four colors, is a magnificent bloomer in late spring. The Parisian florists are said to have it in flower the last of March.

Wall flowers of last year's growth wintered well in the frames, some in pots and some in the ground. They began to bloom late in March and lasted till July 1st, the older plants, which were the only ones in pots, but also in the open ground, flowered earlier and longer than the plants from late summer sowing. An early spring sowing of the early Parisian should be made to follow the summer sown plants, and then one may have

wallflowers continuously from March till January, for we cut wallflowers in the open garden last winter till the 6th of January.

The dwarf forget-me-not Goldelse is a pretty ye low-leaved bedding plant. The flowers are too small for cutting. *Elegantissima* is fine, but I should make this selection: for earliest, *dissitiflora*, for cutting to follow, *grandiflora robusta*, for borders and pots, Victoria, and to follow these, *palustris grandiflora* and *palustris semperflorens*. *Dissitiflora* and the *alpestris* varieties began to bloom in frames about April 1st; the same varieties which had been in the border all winter followed; then came the *palustris* varieties and they promise to keep up the flowering till the end of summer. Nearly all these classes may be had in white and rose as well as blue.

Dianthus plumarius from seed sown last summer yielded some fine examples, including Cyclops, and all are very profuse flowering; they come about a month earlier than the early Vienna and Grenadin carnations, which makes them valuable. These latter are just passing from their bright, fragrant and abundant bloom, and the Marguerite, Chabaud and border classes are coming in to carry forward the season till mid-autumn.

A few earlier sown pansies of last summer were larger than the usual sowing when put into the frames in fall; they came out larger in the spring and have yielded a great many more flowers. I intend to sow all my pansies earlier this year, that is in July. E. R.

Plainfield, N. J., July 3.

FRENCH RANUNCULUS.

What is the proper treatment of French ranunculus after blooming in a frame? If desired to bloom again next season should they be left alone or taken up? Can they be relied upon to do well or is it better to buy new stock? C.

It is advisable to lift the bulbs when they are properly ripened and store away in dry sand in some cool place. If they have been properly ripened they can be relied upon to bloom next year all right. Try a few planted out in the garden early in spring. We have had them do very well in this way. The bulbs can be kept dry over winter without injury. They like plenty of water in their growing season, and this should be seen to if large flowers are wanted. DAVID FRASER.

Miscellaneous.

THE USE OF CUT FLOWERS.

Many villages of the middle west are without local florists, but set pieces are beginning to be seen at funerals just as they are losing cast in cities, yet that amateur work in flower arrangement is a necessity in most country towns is shown by my own experience. Within one week, recently, I was asked to take in hand floral decorations for two funerals and a High School commencement.

The funerals were on successive days, one being held in a dwelling house and the other in a church. The first step in collecting available material for the work was a trip to fern hill where enough wild maiden hair fern of luxuriant growth to closely fill a small tub when standing with stems in water was gathered, also a less generous supply of one of the aspidi-

ums, having dark green evergreen fronds shaped like those of the so-called sword fern, as well as some of the peculiar sensitive fern *Onoclea sensibilis*. Part of the ferns were used for the first service and the remainder, left in the tub and stored in a cool, dusky cellar, were in excellent condition for the second. Suitable hardy flowers in bloom included German irises, snowballs, lily of the valley, columbine in variety, Reeves double spiræa and *Deutzia gracilis*.

For the house service the mantle in the



BUTTERFLY CYCLAMEN.

front parlor, before which the casket stood, was used as the basis of operations. A board fitting it in length and width, and having a narrow strip of pine tacked lengthwise on the front edge, was laid on the mantle. Then beginning at the middle of the front edge of this board, and working to the ends, slender strands of evergreen ferns that had been made by overlapping fronds bound with dark green cotton thread, were tacked in position at equal distances, the strands growing shorter as the distance from the middle increased. These strands were brought down in gradually lessening curves, and gathered back and tacked to the plastered walls just where they met the marble pilasters of the mantle, making a dainty drapery of green against the white background and seemingly held back by a generous cluster of lily of the valley set where the strands met and then fell free like the end of a draped lace curtain. Near the ends of the mantle were placed two handsome Royal Worcester vases differing in shape and decoration but each about twelve inches high and both of the well known soft cream tint. The wider mouthed of the two was filled with long stemmed pearly white irises showing a faint mauve tone and with them a few spikes of their own clean cut, blue-green leaves. The other held a tall bunch of nodding columbines in white, two shades of lavender, deep purple, pale yellow and, standing well above the others, perhaps half a dozen of the singularly graceful *Aquilegia canadensis*, all rising from their own foliage.

In the middle a crystal rose bowl held a large, rather spreading but not overcrowded bouquet of purple irises, none of which stood much higher than the tops of the end vases. The spaces between the bowl and the end pieces were nearly filled by two common, sheet iron bake pans filled with wet sand and tilted up between the wall and the cleat on the front edge of the board. The pans were fringed all around with maiden hair ferns, hiding them as well as the edge of the board, and were then filled with a billowy mass of big, fleecy snowballs which were relieved by a filmy veil of scattered fronds of maiden hair, and from the upper side

of each projected three large leaves of the plantain lily (funkia) all leaning outward from the center piece of purple irises and resting against the wall, their stems being veiled by the fringe of maiden hair ferns which was lighter on the upper sides than on the ends and lower sides.

At the extreme ends outside the Worcester vases large bunches of lily of the valley in nests of their own foliage were laid on the board, and the design was completed by a similar tied bunch resting in the middle in front of the rose bowl where it peeped out through the almost interlacing fringe of maiden hair ferns that bordered the banks of snowballs.

A tall lamp with base in the form of a small table with top and shelf below of California onyx was placed at one side in the wide doorway between the parlors, the lamp being replaced by a Parian marble vase filled with upright and drooping sprays of *Deutzia gracilis*. Below on the table, a similar vase held a bunch of long-stemmed Bride roses, while on the lower slab of onyx rested a circular mound of pansies and ferns.

On the square piano in the back parlor stood a dull red Japanese jar about two feet high filled with quite large branches of snowballs interspersed with extraordinarily long-stemmed purple irises, and at the opposite end of the room a smaller red jar full of white irises and drooping sprays of double *Spiræa Reevesii* finished what proved a decidedly effective decorative scheme.

For the church service time, materials and space demanded large and simple pieces. The church furniture included two small square tables—on each side of



CRESTED CYCLAMEN.

the pulpit just inside the after railing. One of these was removed and its place filled by a section of nine-inch drain tile painted in oils for use as an umbrella stand. On a background shaded irregularly from almost black at the bottom through olive tones to pale yellow green at the top were painted flowering trails of trumpet creeper in natural coloring. By using a pail of water inside it this served admirably as a receptacle for a snowball tree built up with carefully selected branches bearing fine blossoms, some of them of extraordinary size. The tree when finished stood fully five feet high and some of the lower branches curved out over the altar rail making a unique and effective yet appropriate decoration. On the remaining table an embroidered linen tea cloth—all white—was spread, and on it stood a sheet iron bake pan fifteen inches square filled with wet sand. In the middle of the pan was placed an old fashioned glass fruit stand

eleven inches in diameter and seven inches high, also filled with damp sand, and from the middle of the stand rose a slender, flaring glass vase ten inches high and shading from amber at the base to ruby at the broadly fluted, flower-like rim. It was held firmly in place by being imbedded in the wet sand. The pan was a little larger than the top of the table and was heavily fringed all around with maiden hair ferns, the space between them and the stem of the glass stand being banked with snowballs—a full fleecy white cushion from which, near each corner, rose three of the short, curving, pale green fronds of the sensitive fern. The glass stand was also filled by a soft puff of snowballs openly fringed and lightly veiled with maiden hair, and the vase held several clear yellow native cypripediums, popularly known as ladies' slippers, on long stems with their beautiful leaves, rising from a spreading tuft of slender fronds of the evergreen fern.

The remaining decorations consisted of bouquets, the most noticeable being a red jar of white irises, a large pink vase filled with *Wiegelia rosea*, and in the window recess back of the pulpit, tall groups of purple irises with their distinct foliage, rising from the handsome heart-shaped leaves of the white day lily, were sharply outlined against the opaque glass.

FANNY COPLEY SEAVEY.

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PROGRESS OF THE CYCLAMEN.

The accompanying engravings are reproduced from the *English Gardeners' Chronicle*, in which they appeared in connection with a paper that had been read before the English Royal Horticultural Society. The Butterfly cyclamen shown in the figure was raised by M. de Langhe-Vervaeke, and the crested form was produced about four years ago by Messrs. Hugh Low & Co. This last is undoubtedly the most remarkable form which has made its appearance under cultivation.

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I have been waiting for reports of the new Ramblers, as to their hardiness; but in these "sports" it seems to me we shall get two reliable and pleasing varieties. I should be glad to learn if others have had a like experience. E. W. COLLOQUE.
Oxford, N. Y.

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Hammond's Slug Shot Works, Fishkill-on-Hudson, N. Y., slug shot; I. L. Pillsbury, Galesburg, Ill., carnation support; D. B. Long, Buffalo, N. Y., rooted cuttings, planting stock, etc.; Siebrecht & Son, New Rochelle, N. Y., orchids, palms, ferns, roses, etc.; A. T. Goldsborough, Washington, D. C., Louis Gauthier strawberry; Gould's Mfg. Co., Seneca Falls, N. Y., double acting well pumps; Ludwig Moller, Erfurt, Germany, horticultural books; Tokio Nursery Co., Tokio, Japan, plants, bulbs, seeds; Peter Henderson & Co., New York, vegetable plants and seeds, pot grown strawberry plants; F. Sander & Co., St. Albans, England, new plants.

WE HAVE RECEIVED from Mr. F. A. Baller, Bloomington, Ill., sample berries of the two American gooseberries, Downing and Red Jacket. Both were of good size and fine flavor. Mr. Baller writes that he has about three acres in bearing and that he would not like to make an estimate as to the quantity of fruit in sight for fear of being set down as a crank. What we seem to need here is flavor and he believes that will come probably at the expense of quantity, but we can dispense with quantity to a considerable extent if present indications are worth anything. Twigs of the two varieties named which were sent us were as thickly set with fruit as they possibly could be.

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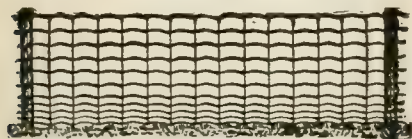
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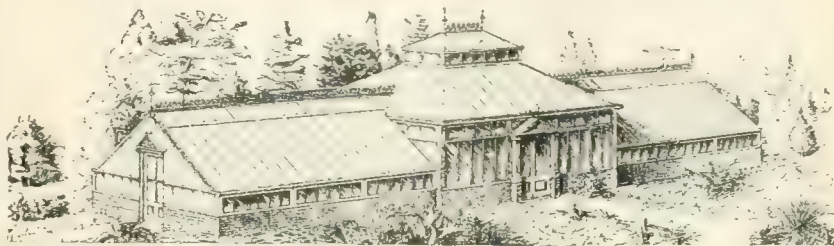
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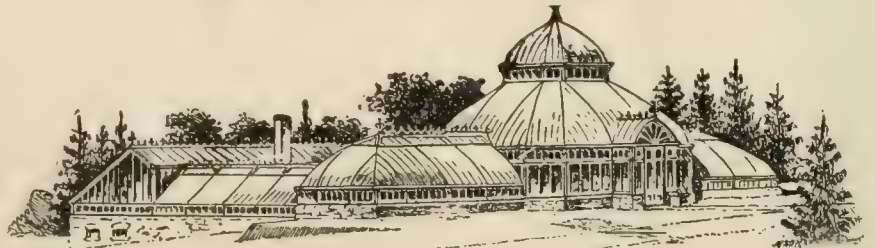
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No. 118.



CORONILLA VARIA.

The Flower Garden.

CORONILLA VARIA. [Crown vetch.]

The illustration shows a plant in a rather trying situation; being in a dry hole within two feet of the edge of a deep ravine, and receiving but little direct sun.

Three years ago it was planted in good soil in the perennial border, but it soon developed a disposition to monopolize all space within sight, so it was moved to where it has to fight for an existence. Being a good fighter it has shown itself master of the situation and is now a pleasing feature of the ravine edge. It is a free bloomer, and with me is constantly in flower from June until September, but at its best in July.

The generic term coronilla is derived from corono, a crown, in reference to the flowers being disposed in umbels at the tops of the peduncles. Being a member of the leguminosæ family its flowers are pea-shaped, pink and white in color. It is a native of Europe and was discovered in 1640.

While too rampant for the border it is most excellent for rockeries, ledges or dry and semi-shady banks. W. C. EGAN.

PLANTS IN BLOOM JULY 15.

The month of June and the first half of July have been very hot and dry, with no rain for over five weeks. The garden plants have suffered a good deal, but the other day rain came, which lasted for two days and today the garden looks fresh and green and flowers are plentiful. I may note here that this spring we mulched most everything in and around the garden with old manure, and it was a great help to the plants during the dry weather. They kept their foliage well and the ground retained the water given while the plants left unmulched dried up and were almost dead. Next year we will give everything a good mulch, as it pays in our hot dry summers.

Among plants that have come into flower since the first of the month are *Achillea The Pearl*. This is a free flowering and rapid growing plant with small white button-shaped flowers, much the same as the feverfew. It lasts for some time in flower and is fine for cutting, lasting well in water. If it is cut back after through flowering it will come up again and give a few flowers in the fall months. *A. ptarmica fl. pl.* grows much the same as *The Pearl*, but the flowers are a little smaller. Both are choice border plants and will grow most anywhere. *Platycodon*

grandiflora and *P. Mariesii* are two showy and free flowering plants. The first named grows about three feet high and has large bell-shaped blue flowers. The variety *alba* grows the same but has white flowers. *P. Mariesii* grows only about a foot high and makes a nice border plant; it lasts the most of the season, like the first named. The flowers are blue and white. *Achillea millefolium* has finely cut foliage with bright pink flowers in dense heads. It makes a nice border plant and is always attractive. *A. mongolica* has large heads of pure white flowers and like the other should be in every collection of hardy plants. Most all the achilleas are excellent, and all good to cut from.

Monarda didyma with its showy heads of scarlet flowers is quite conspicuous. It lasts a long time in flower and is in every way a good border plant. *M. hybrida* has pinkish white flowers but is not so showy as the first named one. *Gypsophila paniculata* forms a broad branching bush and is one of our most graceful hardy flowers for cutting purposes. It has minute white flowers in immense open panicles with stiff wiry stems. To associate with stiffer flowers for vase work too much of it cannot be grown. It is easily raised from seed and this is

about the only way to get up a stock of it; as it makes such long roots it is hard to divide.

Hypericum aureum is a small growing shrub generally used in the herbaceous border. It grows about three feet high, forms a dense globular head and gives a succession of bright yellow flowers in the greatest abundance. A choice and good plant.

Echinops sphærocephalus is a stately growing plant attaining a height of seven feet. The flowers are blue, in globular heads, more odd than beautiful. *E. Ritro* grows about three feet high, the foliage handsome, the flowers blue, in globular heads; an odd and beautiful border plant.

Bocconia cordata is an attractive plant growing six to eight feet high, with large deeply cut handsome foliage and long spikes of small creamy white flowers. A fine plant for the sub-tropical garden, or well adapted for single lawn specimens. In the herbaceous border the plant is a little too large unless the border be very wide. *Campanula lactiflora* makes a compact plant about a foot high, the flowers white and bell-shaped, but it does not seem to be very hardy as we lost the most of ours last winter.

The dahlias are now flowering freely and will last all summer. The large double show ones are giving some very large flowers, but for cut flower purposes the cactus varieties are far ahead of them. These are not so stiff, the flowers being more open. The singles are also flowering freely and if good colors are got they are fine. Seedlings are mostly poor and the best way is to get a few good sorts and propagate from them. *Hemerocallis Thunbergii* is one of the last day lilies to flower. It is a handsome plant when in flower and lasts for some time. The color is yellow and the flowers are very sweet scented. *Funkia lancifolia* has long spikes of bell-shaped lavender flowers. *F. ovata* has dense spikes of lilac flowers. *F. Fortunei* has oval foliage and long spikes of mauve flowers. All the funkias are good and will grow most anywhere. *F. grandiflora* is one of the best but it is not yet in flower. *Malva moschata alba* makes a low branched bush with a wealth of beautiful pure white bell-shaped flowers and is very choice for cutting purposes. Although only a mallow it is one of the showiest white flowering plants we have in the garden.

Among bulbous plants *Hyacinthus canalicatus* is now in fine shape. Big clumps of them planted here and there in the garden have a telling effect. They prove perfectly hardy here and should be grown largely in every garden. The tall spikes of pure white bell-shaped flowers last for some time in perfection and are all that could be desired. *Gladiolus Childsii* in many choice varieties helps to keep the garden gay. Too many of these cannot be grown, as for massing nothing could be better. If some are planted very early in spring far enough apart so another planting can be made between them the show will last the most of the summer. *G. breuchleyensis*, the old scarlet, we use in large numbers for massing around in the borders, and how rich it makes the garden look! Nothing could be better and nothing showier than these cheap gladioluses.

Early started tuberoses have been in flower for some time. We grow them largely as they are one of our pet plants. The dwarf Pearl is the best one; the spike is compact and stands up better than that of the tall one. *T. albino* is the single form; the spike is well filled, but to our taste it is not so good as the Pearl,

though some might like the single one. It is all a matter of taste. *Zephyranthes rosea* is a pretty bulbous plant that grows only a few inches high. The flowers are large, three to four inches across, color pink. *Cooperia Drummondii* is another pretty bulbous plant. The flowers are star-shaped with long tubes, pure white and very fragrant. These two bulbous plants are not hardy and have to be taken up after they ripen in the fall.

Lilium auratum and some of its choice varieties are now quite conspicuous in and around the garden. There are many varieties of this lily and all are good. Of the choice ones in flower *L. a. Wittei* has very short petals and is not so large as *auratum* usually is; it is a rather scarce variety; the flowers white with a central band of yellow. *L. a. rubro-pictum* is a fine large flower beautifully spotted, with crimson tipped petals. *L. a. rubro-vittatum*, the red banded variety, is strong growing and seems to grow better than the type, a lovely flower and very large. *L. chalcedonicum* grows about three feet high and has bright coral red flowers. *L. Krameri* is two to four feet high, flowers varying in color from pink to blush, of good size, in every way a good lily.

Mahwah, N. J.

DAVID FRASER.

DWARF PERENNIALS FOR EDGING.

Mrs. L. S. R. would like us to recommend some dwarf perennials suitable for edging the beds in a geometrically planned flower garden with gravel walks. We would advise to edge each bed with a different plant, to bloom at various seasons, the smaller beds with the very dwarfiest, and the larger ones with some more robust growing plant.

There is a great variety of material to select from, but we should first of all consider the height and character of the plants in the body of the bed and let the bordering be in perfect harmony with them. In large beds, where taller plants, thrust their flower spikes out near the front, a very narrow and low edging would be out of place; in those of smaller dimensions, planted with dwarfier plants a clean sharply defined edge is more suitable. We also should use mainly such things as can remain undisturbed for several successive years without replanting and can stand an occasional trimming with knife or spade, whenever they grow beyond their limits into the walk or too far into the beds.

For a bordering of only about three inches high or less we can use the yellow spring flowering *Erysimum puicellum*, the white arenarias in several sorts, the blue flowering *Ajuga reptans* var., the yellow and red *Lotus corniculatus*, or the charming *Silene acaulis* with pink flowers, and the free blooming aubrietias are most beautiful in this position, also the little *Astragalus hypoglottis* with its pea-shaped flowers.

A little taller, up to six inches or a little more, are *Arabis albidia*, which during the spring months is literally covered with its white flowers; the pink armerias in several kinds; *Erinus alpinus*, with purple flowers; several of the variegated funkias; *Iris pumila*; *Linaria alpina*, with its pretty blue or violet flowers; the *subulata* section of rhloxes in various shades, the lovely blue *Polemonium reptans*; *Saponaria ocymoides*; which in its time is covered with a mass of rosy pink flowers; *Silene alpestris*, white; the late blooming *S. Schafta*, with purplish pink flowers, and the beautiful everblooming *Viola cornuta* in various shades of blue or pure white; *Iberis sempervirens* and *I. correa-*

folia are both good plants for the purpose and when trimmed in annually after flowering time is over may remain undisturbed for many years. *Tunica saxitragea* is also a first-class edging plant but should only be used where a wide bordering is required. *Aster alpinus* is covered with large blue star-like flower heads in the earlier part of the summer. The blue *Plumbago Larpenæ* is one of the best late blooming plants and the variously colored *Campanula carpathica* flowers nearly all summer.

With very little care any of the above plants may be kept in bounds, an occasional trimming being required by some, but most of them will naturally form a well defined sharp edging without the repeated use of shears or spade.

The best time to transplant ordinary perennials is early in the fall, early enough to allow the formation of young roots before cold weather sets in; fall plantings start more vigorously the following spring and give generally better satisfaction; especially is this noticeable in early flowering species, while the difference is not so marked in the later blooming plants, because these have a longer season to gain strength and perfect their growth on which they are to flower.

As to the next question: When to plant magnolias, we usually have the best success with late spring planting. Wait until the buds are well out, even when some of the flowers have opened out it is not too late. They should be planted firmly and a good liberal watering, administered when the tree is planted but the excavation not yet filled in to the proper level, will settle the soil in a solid mass around the roots and then there is but little danger of losing such a tree, even if it be above the ordinary size. Late transplanting is advised for magnolias because root action is necessary to keep the top from drying out too much and we usually can count on quick formation of new roots when the tree is in a somewhat advanced state, ready to make its summer growth. K.

HEDGE OF ROSA RUGOSA.

This rose, as a shrub, has been mentioned quite often in GARDENING, but not oftener than its merits warrant. I intend now to speak of it as a hedge plant. The illustration here given does not do it justice for two reasons. The white and deep pink forms are used, and the latter color is one that seldom "takes" in a photograph, consequently only about one-half of the blooms are seen; again, two years ago the shape of the roadway was changed, and the hedge replanted in a slipshod manner during my absence, causing an unevenness of form that will take this season's growth to overcome.

To appreciate this rose as a hedge plant one must have a sentimental longing for a hedge of roses, must have seen or heard of those unrivaled long stretches of glowing beauties that the climate of southern California produces, and must then remember our cold and bleak winter winds, our scorching summer suns, and worse almost than either, our rapidly changing climate, producing mildew, black-spot, rust and numerous other ills that our roses are heir to. Having all these in mind, and discarding such minor eccentricities as are executed in such a thorough manner by the rose chaffer, the rose slug "and sich," one certainly cannot help appreciating a rose that laughs at all these enemies of their weaker sisters and seem to say to you, give me root and head room, food and drink, and you



A HEDGE OF ROSA RUGOSA.

needn't even touch the button, as I'll "do the rest."

No cold disturbs them, no heat burns or disfigures them, no insect attacks them. During the June carnival, when all other roses are gaily decorated in unrivalled colors, they too are profuse in their bloom and produce their sweet scented offerings in successively opening clusters, set amidst the richest of leathery green foliage. When the carnival is past, and the "June roses" retire for the season, and a few of the hybrid perpetuals prepare a limited quantity of scattered blooms for the fall show, this rose not only goes on producing its saucer shaped open flowers, but in addition it matures its hews in a generous manner, generous in quantity and generous in size, tinting them like cherries, and hanging on to them tenaciously until the frost shrivels them. All through the summer months, be the season wet or dry, this rose blooms and matures its hews, and as one stands and admires its rich, dark, uninjured foliage it is an undecided question which is the handsomer, the flowers or the berries.

The flowers are single, large, opening out well, and have that delicious "wild rose" scent we all appreciate. The white form is a paper white. The pink seems to vary from light to a quite dark pink. They present a fine appearance in masses, either in mixed colors or separate, and require no special culture, but of course appreciate a good heavy soil.

The grasses seen beyond the hedge are the *Eulalia gracillima univittata*. Immediately in front of them is a Teas' Weeping Mulberry, grafted eight and one half feet high, planted this spring. Being cut back quite severely and slow in starting it presents a singular appearance from the road, so much so that I was asked the question if I had not planted the tree upside down. It will take a few years to make a good specimen of it, but it will then be much superior to the low grafted forms.

W. C. EGAN.

SUMMER BLOOMING CARNATIONS.

In Europe the carnation (*Dianthus caryophyllus*) is one of the most popular of garden flowers, but strange to say we see very little of them here, and why should this be? They are of easy culture, with us they have proved perfectly hardy and are now giving a wealth of bloom. From a few papers of choice seed one can expect some very good flowers, although a percentage of them will be single.

Carnations are divided into four classes, namely bizarres, flakes, cloves and picotees. The bizarres have three colors in the flower, flakes two, cloves are self-colored and strongly clove-scented; picotees have a white ground with the edges of the petals a different color, generally light to dark pink, and to our taste are the loveliest of all the carnations.

As a cut flower the carnation comes next to the rose. The summer blooming varieties are more highly scented than the varieties forced by the florists in winter, but are not of such fine form and size, unless named varieties are obtained.

Carnations can be propagated in three ways, namely by seeds, cuttings or layering. If from seeds these should be sown in the early part of July in boxes or prepared beds, but I prefer boxes as the seeds of a choice strain are very few indeed, in fact some of the most expensive ones we sowed the other day had only from 15 to 25 seeds to a paper, but from these we will expect something good. They germinate very quickly coming up in from four to eight days. When large enough they should be potted in small pots and plunged in an open frame. They should have the protection of a cold frame for the first winter, as in this way the plant will be larger and give more and better flowers. If it should not be convenient to winter over in frames it would be advisable to sow early in spring and when large enough plant out where they are to remain. From seed we always get some single ones, and if cheap seed is sown you cannot expect many good flowers. From

Sutton's prize perpetual and early scarlet (grenadin) we have some fine flowers and in great variety of color. We go over them every other day and mark the best so as to know which to take cuttings from. If some seeds are sown every year and only the best of them kept a collection of good sorts will soon be had.

Propagation by cuttings is sometimes a difficult matter in summer, the cuttings being so soft that they damp off very readily, but I have had very good luck with them by using bell-glasses. I put the cuttings in pots, eight to ten in a 4-inch pot, using clean sharp sand with some moss in the bottom of the pot. I place them in a shady part but where they will get plenty of light and keep the bell glasses free from moisture. When they show signs of growth a little air is given by tilting the glasses. To-morrow (the 15th of July) we will put in 500 cuttings in this way. These are to be planted out about the 15th of September and wintered outside. Again in September we will put in 500 more to be wintered in frames. Some may ask why put them in a frame? This is to make sure of having them. Our garden is situated near the deer park, where rabbits abound in great numbers, and these garden pests are very fond of carnations, which we know to our sorrow, as they almost cleaned us out last winter.

Propagation by layers is best done in the early part of August. It consists of putting some sandy soil around the plant and stripping each shoot of leaves, that is, have two or three joints bare, then with a sharp knife cut half through a shoot below a joint, bringing the knife up the center of the shoot a little. Take a peg with a hook in it and press into the soil. Just as the peg comes down it will catch the shoot where it has been cut. Press it into the ground a little and put a little more soil over it, making it firm, and the operation is complete. This is the English way of propagating, but it is a tedious one and rarely done in this

country except for very choice stock. As the month of August with us is very warm it would take a man all his time with the watering can, as one could not expect plants to root when the soil is at all dry.

We have now a great race of summer blooming carnations called the Marguerite. In these we have something that will bloom four months from the time of sowing the seed. They are very good indeed, and a marked improvement is noticeable in them this year. We have Sutton's improved pure white with some good flowers and it has come so far true from seed. In the mixed ones we find a multitude of colors and markings and for a mass of bloom they are very desirable.

The carnations used by the florists for winter flowering can also be used for summer flowers if properly handled. I have found September the best time to put in the cuttings, wintering in a cold-frame and planting out about the end of April. They will then flower from the end of June till cut by frost. If a good many are grown carnation flowers of good quality will be had all summer if proper attention is given them. There should always be a mulch of some sort around the plants. This keeps the roots cool and helps to retain the moisture. In dry weather they should have a good soaking of water every few days. They should also be kept tied up in some way or the flowers will get dirty. If very large flowers are wanted disbudding will have to be done; but we rarely do it as we prefer to have a mass of bloom, instead of a few, as we cut very few of them.

Mahwah, N. J.

DAVID FRASER.

PAEONIES—ROSES—DEUTZIAS—ALTHÆA.

Please give us some suggestions for beds of pæonies. There must be some way to beautify these beds after the pæonies have done blooming, and in the plans offered don't forget the preferred width of bed, and the distance the pæonies should be planted apart. Also, why do some pæonies take so long to bloom? We have some plants three or four years old, that have never given us a blossom.

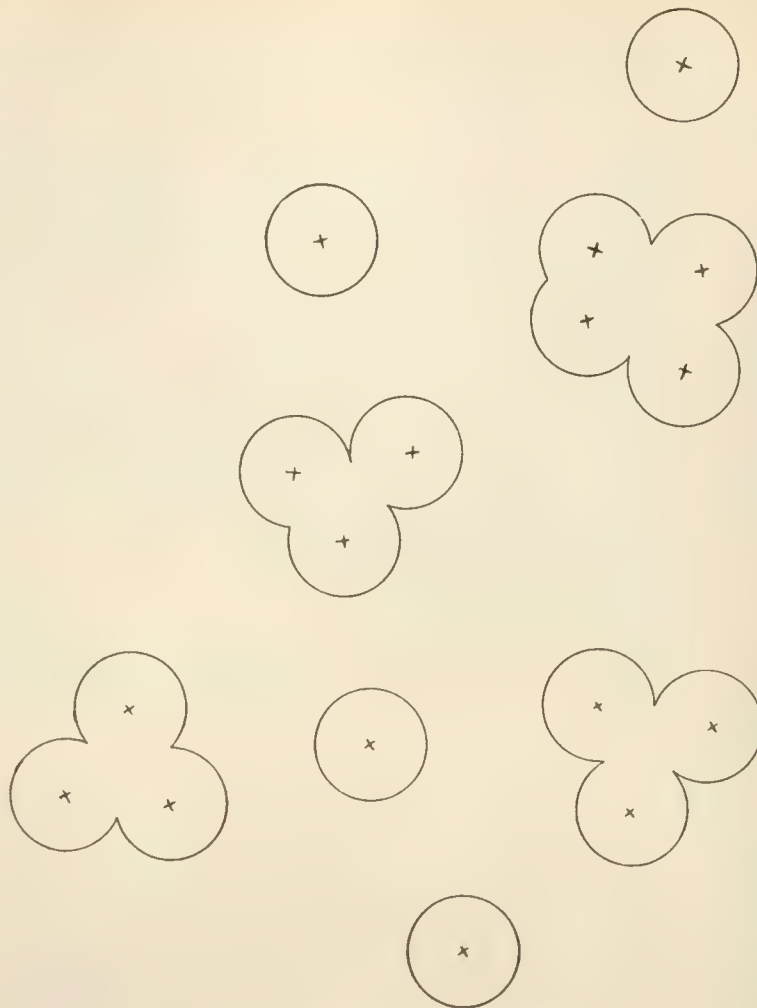
Is the *Wichuraiana* rose hardy in the vicinity of Chicago? If so what is the approved method of growing it? Would think it likely to be most effective tied to a post, and if raised in that way could the canes be laid down without breaking off? And how about the hybrids that Henderson offers?

Judging by what Mr. Egan says in GARDENING of June 1, about the winter killing of his deutzias our winters are not quite so "hard" in Crown Point as west of Chicago. We are only 40 miles southeast of the city and say 15 miles south of Lake Michigan, but our deutzias never were so fine as this year. They are always wrapped in straw and tar paper of necessity, still very frequently half the growth will be winter killed, but this season the pruning of the dead wood was nothing. The *D. gracilis* were sheets of loveliness for a month. The Pride of Rochester commenced June 1 and for weeks was our pride and joy. It covers seven cubic feet of space, is of beautiful shape and has a few blossoms yet, and the *Fortunei* is in fine bloom at the present writing. This last named is our most tender variety.

We have a fine specimen of the variegated leaved *althæa* which is growing too tall for its location. Can it be headed in without injury?

F. N. B.

Pæonies should be planted about three



GROUPING PÆONIAS ON THE LAWN.

feet apart, a little closer, if necessary. The size and shape of the bed depends upon surrounding conditions. You must remember that the plant presents a heavy mass of foliage, and when planted in a mass it has a "lumpy" look rather than an airy, open one, consequently, bearing in mind that nine-tenths of the season it is out of bloom, one should use some judgment when making a special bed of them.

In a very wide shrubbery border they may be treated as a low shrub, and fill an irregular shaped bay, and be effective both in flower and out, as the irregularity of their shrubbery fringe of taller plants relieve the monotony their heaviness and sameness of height produce.

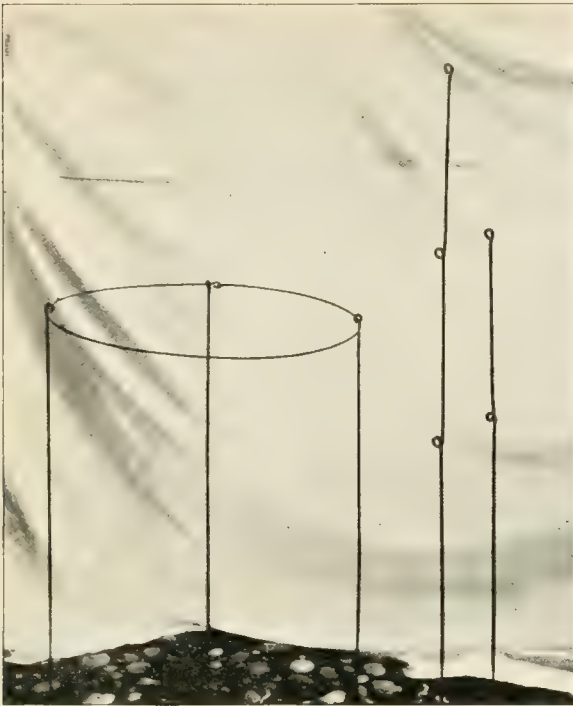
When you decide upon the shape and relative size of the bed, take an ordinary sheet of ruled writing paper. At the top line put a cipher, and then number each line downward consecutively. Take a drawing compass and make circles three lines in diameter, the width between each line representing one foot. Let the centre of the top circle be on the line number one. The first row of pæonies would be planted on line number one, but the outer edge of the bed would be at the cipher. If they were planted in a long narrow bed in a single row, a bed two feet wide would be enough. It is the head room mainly that requires the three feet width. Continue your circles down the line and you will see that two rows require a bed five feet, three rows eight feet, and four eleven feet wide. In this figuring the outer

row is planted within one foot of the edge. If circumstances compel it, they may be planted at six inches from the edge. You can readily get at the length of your bed by this figuring and tell the number of plants it will contain. Observing that each additional width or length must be a space of three feet, and the narrowest point two feet. On this basis you can make the bed any shape desired.

Sometimes one's place is not formal; it may be surrounded by curving lines of other plantings where square or oval beds might look out of place, and yet one desires to grow this most excellent plant. I have prepared a diagram of the way I grow my pæonies. These beds are made in the lawn at one side, and so grouped that at a distance from our porch it seems one bed when in bloom.

There are four holes two feet in diameter, each containing a single plant, three that measure four and one half feet at the widest part, containing three plants each, and one measuring five feet containing four. The nearest point any one bed is to another is three feet, which allows the lawn mower to pass between them. These beds are two feet deep, and are well manured and well watered, especially just before blooming.

I have had no trouble about pæonies not blooming. I would advise you to work away the soil around your plants as deeply as you can without much root disturbance, and replace it with rich earth rather heavy in nature, and mulch well with manure this fall. Next spring if



WIRE STAKES



WIRE STAKED PEONY.

the season is at all dry water freely. Be sure that no roots from adjoining trees are stealing the sustenance from the plants.

One essential feature about a peony bed is to have it neatly staked. Nearly every one seems to use barrel hoops. These are well enough around a keg, if the beer is good, but the Lord never intended them to hold anything that wasn't fermented or pickled. The illustration shows the supports I use, and a so a staked plant after blooming, which will give an idea of how unobtrusive this support is. Twenty feet away it cannot be seen, while you see a barrel hoop even in your dreams. They are made of galvanized telegraph wire, twenty-three inches in diameter. There are three legs $2\frac{1}{2}$ feet long made of $\frac{1}{4}$ -inch galvanized wire. At the same time is shown some flower supports made of the same wire as the legs above described, the lengths being respectively three and four feet, the loops being one and two feet from the top. They are to be put one foot deep in the ground. While these cost something at the start their lasting qualities and the time saved in tying up the plants, soon make up the expense. The loops in them enable a string or bast to be run through them readily, and prevent slipping.

About beautifying the space occupied, after the peonies are done blooming. If grown as I grow them this question does not come up, but in beds it is a pertinent one. I would suggest *Callirhoe involu-crata*, the procumbent summer blooming poppy-mallow. Some of its shoots will find their way up among the peony branches and bloom in unexpected places. The *Coronilla varia* would carpet the ground and give its rosy pea-shaped flowers for a long time. While a spreading grower I don't think it would injure the peonies. The dwarf variegated funkia would do well under the shade the peonies afford. Lilies such as *superbum*, *canadense*, or *candidum* would do.

Rosa Wichuraiana may be considered hardy in the vicinity of Chicago when

once established. In rich soils it grows rapidly and some of the new wood may be injured therefore it is best to protect it. It does not, however, in common with all roses, like a covering that soaks in and retains moisture that rests against the wood during freezing and thawing weather. Where grown in beds and allowed to run along the ground, throw some small brush over it, and then some straw material, or just put sheets of tar paper over it, with branches underneath to hold the paper up, thus admitting air. If grown to a post or trellis, any wrapping will do, but it is best to protect it in an upright position. The canes are pliable and can be bent down without injury and protected but if not careful to make the covering water proof immediately over that portion where the bend is, it is apt to rot there if the winter be similar to the last.

It is a matter of individual choice whether to grow it procumbent, or trained to a pillar. Both ways produce a fine effect. A circular bed ten feet in diameter, raised a little at the center, makes a fine mound. You can plant a pillar rose in the center, say Paul's carmine pillar rose, Crimson Rambler, or plant some of Manda's hybrids to the post and the type in the bed. When strong growth commences keep the points turned towards the center.

Manda's hybrids that the nurserymen are now offering are great acquisitions and while too recently introduced to speak knowingly of them under trying conditions they promise to be great garden favorites. I have bloomed them and am much pleased with them. You should try the hybrid sweet briars; they are fine also.

Wait until next spring and then cut back your althea to where desired, waxing the cut ends if large; it will stand it.

W. C. EGAN.

ASCLEPIAS TUBEROSA.

Replying to A. N., New York, the plant sent for name is *Asclepias tuberosa*,

popularly called "Butterfly Weed," "Pleurisy Root," "White Root" and "Indian Posy."

Its many names bear witness to its wide distribution and conspicuous beauty. It is called "Butterfly weed" because its showy trusses of bloom are a favorite perch for butterflies during the hours of sunshine. The name "Pleurisy Root" would indicate attributed medicinal virtue. In some sections of this country the plant is called "White Root" and the fleshy, not unpleasant tasting roots are dug up by boys and chewed for their expectorant effect.

This plant is a perennial. Late in the spring it sends up a number of stems from the crown of its stout root; each stem usually bears widely forking branches at the end and each branch has a bright corymb of bloom made up of many umbels. The color ranges from yellow to deep orange red and the height from one to three feet. It will thrive on the driest sand ridge and it used to flourish on the prairie knolls of the interior of Illinois; the only condition seems to be that it must have good drainage.

In the perennial border it has the good quality that it may be relied on to stay where it is planted, as it does not spread perceptibly by the root. The seeds are contained in lance-pointed follicles with long silky down like the seed of the milkweed.

LEMON VERBENA.

Please advise as to the best time and way to cut lemon verbena. It sometimes lasts for days and again droops within an hour.

E. S. P.

If lemon verbena is growing fast, as it does out of doors when planted out, it will quickly wilt. When first cut, even if placed in water at once, it will wilt for an hour or two. Many of our flowers and foliage do this and that is why roses and many other flowers should not be cut and used at once. A spray of rose geraniums grown in doors in winter will hold

up moderately well, while the soft, succulent growth which is made in July and August will droop in a few minutes. E. S. P. should cut the sprays of lemon verbena in early morning and as soon as cut place the stems in a jar of water and keep for a few hours in a dark, and if possible,

at least eighteen inches down in the soil. The box should be of the same width, if not more, so as to allow enough root growth to maintain a vigorous plant. The most suitable position, however, for it is an isolated one in the margins of the lawn, where its bold and handsome out-



BOCCONIA CORDATA.

cool room or cellar. After once absorbing the water the sprays will last for days. This rule would not be bad for almost all our garden flowers as well as the products of the greenhouse.

WILLIAM SCOTT.

BOCCONIA CORDATA.
(Plume-Poppy).

This showy member of the poppy family is a native of China, and received its generic name in honor of Paolo Bocconi, M. D., a Sicilian botanist. It is perfectly hardy, grows about six to eight feet in height, blooming in July and August. The flowers are a light buff color, quite numerous and borne in feathery terminal panicles.

It is not, however, as a flowering plant that it is noted, but for its stateliness of form and its handsome glaucous leaves. These are large, lobed, and deeply cut. The plant requires no staking and will stand, even in isolated situations, without damage from the wind. It is one of those good things that wants the earth and if placed in with other plants, it soon monopolizes all the bed.

If desired to grow it in this manner it is easily controlled by planting it within a bottomless box, having the sides extend

line can be seen untrammelled by conflicting foliage. It is perfectly hardy, and easily grown in any ordinary soil.

W. C. EGAN.

ROSA LUCIDA ALBA.

I was much pleased with your picture of this beautiful single rose. It may be of interest to know that it has done well at Humboldt Park, Chicago, for two years and was in magnificent bloom this spring. The plant came from the Arnold Arboretum, Boston.

JAS. JENSON.

Trees and Shrubs.

MAGNOLIA GRANDIFLORA.

I referred to the beautiful evergreen, *Magnolia grandiflora*, in some notes sent you last season. I do so again now because a large specimen is flowering in Germantown at the present time, the first one that has flowered here, to the best of my belief, though not the first in Philadelphia by a great many.

This tree, the one now flowering, is about eight feet in height and as many feet in width, and it may be ten years

old. Usually this species flowers in five to six years, a great deal depending on the soil and situation. As with all trees, when growing vigorously there is but little disposition to flower, but let it be in poor ground, and the blooms come earlier.

The flowers are very large, some measured to-day recorded ten inches in diameter, and the fragrance is delightful. But as with *glauca*, the individual flowers do not last long. The mode of flowering seems to be this. The flower expands early in the morning, it closes partly at about noon, remaining closed until the second morning, when it again opens. It does not close on the second day, but remains expanded, and by the close of the third day the petals fall. The flowers are of a beautiful white, and at the base of the stamens there is a band of crimson, such as appears in *hypoleuca* and I think, *Watsoni*, two Japanese species.

I cannot say how far north this fine evergreen will thrive, but I am sure it is not planted nearly as much as it might be. There are several trees about this city, some of them of very large size. I am told that some years ago, in a very severe winter, some of them lost their tops, but this occurs sometimes in Virginia. Some thirty years ago all the large trees about Washington were killed back almost to the ground. And in recent years I have seen some in the National Cemetery, Arlington, Va., with the foliage scarred in winter just as badly as ever occurs in Germantown.

I would repeat what I have said before as to how to treat young plants. Keep in mind that it is the sun in winter that must be guarded against. Therefore if a situation where but a little morning sun will reach it presents itself, that is the place for it. If this cannot be, then when Christmas time comes get evergreen boughs and place about it, to break the sun's rays. There is not power enough in the rays to harm it until after New Years.

I have one of my own eight feet high, which I did not cover until January 9, last winter, and it wintered in fine condition. Before placing the boughs around it, get forest leaves or long manure and place enough of it about the base of the bush to keep frost from penetrating far. Treated in this way, I am sure this lovely evergreen could be in many more collections than it is.

JOSEPH MEEHAN.

Philadelphia.

DEBUMARIA BARBARA.

Among self climbing vines not over well known which should be much used in gardens is the one of the above name, which comes to us from the southern states. It is closely related to the hydrangea, being in a botanical way but little different from it. But to see its foliage no one would suspect the slightest relationship. The leaves are small compared with hydrangea, and entire, thick and of a shining green. The flowers, while not being showy, are sweet scented and are produced in cymes on the side twigs.

Besides its beauty as a vine, it will be more planted on account of its clinging to walls and buildings, as ivy does. It holds itself, and will run to the top of the highest building. There has been a great scarcity of vines of this character. Among evergreens there are but two, the common ivy and the euonymus, neither of which is entirely satisfactory. Common ivy will not flourish well in the sun, and the euonymus is subject to the attack of an insect which disfigures it so that there is a temptation to cut it down.



THE JAPANESE TREE-LILAC.

Among deciduous sorts there is more variety. There are the following sorts at least: Virginia creeper, Japanese creeper, trumpet vine, three sorts; climbing hydrangea, and the one of which we are writing, the decumaria. For a dwelling house, of deciduous ones, my choice would be the Japanese creeper, *Ampelopsis Veitchii*, for the reason that it makes no twigs whatever, looking neater than any other vine, and affording no lodgment for birds. The decumaria makes some twigs, much as the Virginia creeper does, so that where the congregating of English sparrows is not desired, it may be objected to on that score.

Readers will desire to know about its hardiness. I can say for this vicinity that it is perfectly hardy, so evidently, it may be trusted further north. This beautiful vine flowers the latter part of June.

Philadelphia. JOSEPH MEEHAN.

THE JAPANESE TREE LILAC. (*Syringa Japonica*).

In the June 15th, 1896, number of GARDENING a detached bloom of the Japanese tree lilac was illustrated, and short descriptions given of *Syringa Amurensis*, *S. Pekinensis* and this species. The accompanying illustration shows the full tree in bloom July 1st at Egandale, and presents a fair type of the shape it assumes.

This specimen is standing at the edge of a shrubby bed, amidst low growing

shrubs. The foliage seen above it belongs to trees some fifty feet away. Sometimes the common lilac (*Syringa vulgaris*) is trained to a single stem, and if care be taken of it, can be made to assume a tree form, but this species always takes on the characteristics of a small tree. It flowers in the latter part of June "in a dense-flowered thyse" of a creamy white with a faint odor somewhat resembling that of the privet. The foliage is dark and leathery, and entirely free from mildew or insect attacks. Its hardiness has never been questioned, in fact it stood a temperature of 25° below zero last winter, and moves easily, as proved by the fact that this spring I moved successfully a still larger plant after its leaves had started, cutting off the bloom buds.

As a rule the tree must be well established in its new home before it will bloom, sometimes requiring four or more years before it will flower, after removal from the nursery. What my moved plant will do next year is an unsolved mystery.

W. C. EGAN.

THE CHINESE HONEYSUCKLE.

Please give me the name of the honeysuckle of which I enclose a fragment of a blossom. It is a climber, blossoms like *Halleana*, very fragrant, the outside of the little blossoms a dark purplish red, inside yellow.

Mrs. G. G. W.

The flowers sent, together with the

description given, indicate almost to a certainty that the honeysuckle is the Chinese, known in nursery collections as *sinensis*. This species not only has purplish red flower buds, but foliage of much the same color as well. It is thought to have the most pleasant odor of all honeysuckles. About many residences honeysuckles are planted to the posts of division fences, and the Chinese always finds a place among them, but where a rapid growing one is desired *Halleana* or *brachypoda* is preferred, as the Chinese does not cover a space as quickly as the others do.

Ferns.

A HARDY FERN BED.

I am informed that a subscriber to GARDENING, from Lake Forest, called at the office lately, and stated that he had recently seen some fern beds at Egandale that pleased him, and that he wished I would let him know through GARDENING how they were made. As Lake Forest is a neighboring town, and as I was taught during my Sunday School days to "love thy neighbor as thyself," etc., I shall endeavor to comply with his wishes.

To tell the truth, one of my fern beds—the maidenhair—is a source of justifiable pride, for it certainly is a handsome sight. I never miss showing it to lady visitors because the delicate beauty of a sea of fronds, is sure to be appreciated by them. The common or American maidenhair (*Adiantum pedatum*) grows wild along the shady banks of our ravines, generally being found more plentiful on the north side of the banks. It must not be confounded with the early meadow rue (*Thalictrum dioicum*) resembling it it slightly when young, so much so that is sometimes called the false maidenhair.

I selected a spot where the lawn merged into a gently sloping ravine bank, that is the upper ten feet of the bank had only a fall of a few inches to the foot. Below this space the declivity was quite sharp. All this produced one requisite of success, viz., quick and perfect drainage. On the south and west sides, in addition to the shade produced by tall growing oaks, maples, etc., indigenous to the ravines, this spot was heavily shaded by native *Hamamelis virginiana*, the witch hazel, whose layered foliage hangs over the bed like a canopy. So far the position possessed the second requisite of success, viz. open shade. But the morning sun beat in there and this element of disturbance must be eliminated. I had no space to spare on the lawn to enable me to mass a bank of shrubbery in front so I started to make a screen of living green. I put in a simple woven wire fence eight feet high and twelve long, immediately to the east and planted thickly with the common Virginia creeper.

Now the Virginia creeper and this fern are not congenial bed fellows; if put in one bed they soon quarrel and the fern has to get out. I therefore made two beds, one east of the fence for the vine, two feet deep and wide, and one for the fern, hereafter described, west of the fence. The imaginary line that two quarrelling children occupying the same bed, sometimes make, is not always conducive to permanent peace, and likewise an imaginary boundary of confinement in this case will not do, so I put a 2-inch plank in between the two beds down to the full depth of the two feet.

The next move was to prepare the fern bed. I figured that, as these ferns grew here and there in scattered clumps in our ravines, that the natural conditions of the soil was congenial to them, therefore no preparation was necessary other than to remove enough of the surface to enable me to plant them. This was done by removing about four inches of all the top soil in a space having an irregular outline determined in a measure by the contour of the surface and surrounding conditions.

All this was done in September or October and I was ready for the plants. Taking a narrow post-hole spade that I always use for similar work, a large basket and a wagon I started for the woods. Those growing naturally in my own ravines seemed so happy that I disliked disturbing them. They knew that I loved to have them where they were and that I would not molest them, while their less fortunate sisters in the woods belonging to Tom Jones, the real-estate speculator, were "born to blush unseen." I merely mention this as an excuse for myself and kindred plant lovers, who always go to some other fellow's field for plants.

When plants were found a sharp deep cut was made with the narrow spade, and a clod of soil about three to four inches square and four to five deep was taken up with the fern roots in the center. The fronds are cut off at the time. Reaching home towards evening these squares of soil were packed in the cut out bed just as bricks are placed in a pavement. Old leaf-mould and surface soil from the woods, that had been mixed and sifted through a coarse meshed wire screen before hand, was now placed in between the joints and washed down thoroughly by the hose, and finally an inch layer of this material placed over their entire surface. This was their first winter's covering. Now, in addition to the leaves that naturally fall and blow in over the bed, I give it every other fall a top dressing of rotted leaves. At one edge of it I have planted 200 *Trillium grandiflorum*, which seem at home there, while they are bordered at the north by groups of lily of the valley. Quite near them is a bed of 500 *Narcissus poeticus*, so that this section, a shady one, has some attractive feature the whole season through, as the trilliums, narcissus and convallarias bloom before the fern fronds mature.

At another point, on what might be termed a shelf on a sloping bank some twenty feet down from the top, is a bed of the common brake (*Pteris aquilina*) gathered in the same way. This bed, however, is apt to go back somewhat in August if a dry season sets in.

The ostrich fern, *Onoclea (Struthiopteris) germanica*, not native, does splendidly on my rockery and stands our climate well.

During dry spells in August and later, it is necessary to water fern beds artificially, and care must be taken not to crush down the fronds by heavy watering overhead. Any sprinkler producing a light fine spray will do and it is a good thing to run the end of a hose in the bed a few feet, close to the ground and turn the force on but slightly so that only a gentle stream is produced. Go away and forget your hose long enough to enable the bed to get a good soaking.

The maidenhair is one of the easiest hardy ferns to grow. The shady north side of a house is a good place. Select your situation, spade up the natural soil say six inches deep. If the surface of the soil is level, bring in enough soil from the



SOLANUM WENDLANDII.

woods, or take old sods from the roadside and chop them up finely. Make a layer of this where your fern bed is to be, right on top, but not mixed with your trenched soil, thick enough that when tramped down and settled it is three or four inches deep. Being that much higher than the surrounding soil it secures drainage.

Obtain a few natural rocks, that is rocks showing no recent fractures and that show weather worn surfaces, avoid rounded boulders and fancy stones, and choose those that are rather sharp and jagged; those wide at the bottom and narrow at the top are good. Get them from one to two feet high and a foot or less at the base. Imbed these a few inches here and there in an irregular manner, and then plant your maidenhair or any other hardy ferns in the same manner that I did. Should you buy your ferns, getting the roots only, not with the soil around them, add two inches more of the wood's soil or chopped sod.

W. C. EGAN.

The Greenhouse.

SOLANUM WENDLANDII.

This was introduced in Europe in 1882, and described through the horticultural periodicals, and it is surprising that this

beautiful climber is so little known here. When first cultivated in this country it was treated as a stove climber and the results were somewhat unsatisfactory because of its excessive rampant growth when given ample pot room, as it then proved a shy bloomer, and its value was not apparent. When planted in open border under glass it grows most rapidly and produces a dense mass of dark green foliage, but few flowers. But when planted in a sunny exposure in open ground it soon produces a profusion of blooms, and then stands in the front rank as a summer climber.

When grown under glass the first flowers appear about the beginning of April and are produced in cymes at the end of pendulous branches. At first these cymes measure from eight to ten inches in diameter and consist of from twenty-five to forty flowers, but they gradually assume an elongated form as the flowers develop in succession, and last from three to four months. Each flower measures from one and one-half to two inches in diameter, with a corolla of five divisions and connate petals. When first opening the color is of dark blue; this changes to light lilac in center and a darker edge, and therefore flowers of various shades of blue and lilac are seen at the same time. Each individual flower lasts several days, but they diminish gradually in quantity, still the plant gives more or less flowers from April until



BOUGAINVILLEA GLABRA SANDERIANA.

November, when its foliage begins to fall. Plants in the open ground bloom very profusely from June until the growth is checked by frost.

Being deciduous, it must have a rest during winter, and is readily propagated when dormant. As this plant is a native of the temperate sections of Costa Rica, it can be treated in the extreme south as half hardy, but in colder sections requires the same winter protection as is given to the orange.

P. J. BERCKMANS.

Augusta, Ga.

HEATING A ROOM FOR PLANTS.

I am building a room 16x16 with a great deal of light, suitable for flowers. Steam and hot water heating not being convenient, what kind of stove would you recommend to keep the air as moist as possible?

N. Y.

F. E. B.

I would advise the use of a moderate sized stove with plenty of pipe distributed through the room rather than a larger stove in one corner with very little pipe, because in the former the heat would be better distributed. A stove of ample size would after first cost be much the cheapest because you would at all times save fuel and never have occasion to make the stove red hot to produce the required

heat. The many different designs of heating stoves are legion, but one on which you could keep a pan of water is to be preferred. A pan of water continually evaporating must produce some humidity, and remember the broader the pan the better. I would say somewhere about fifteen inches wide and three inches deep would be best.

F. E. B. need not think that flowers cannot be kept well in a room heated with a stove for we continually see plants thriving and cut flowers looking bright in rooms heated by a stove. Some of the finest grapes ever grown under glass and some of the finest flowers and choicest plants ever produced have grown in greenhouses heated with flues, which are nothing but hot bricks. Can the heat radiated from hot iron be any more harmful than that from hot flues? I think not. For lighting your room use electricity or oil lamps. Illuminating gas is without doubt very deleterious to all plant life.

WM. SCOTT.

BOUGAINVILLEA GLABRA SANDERIANA.

When this new bougainvillea was first introduced it was predicted that it would soon become very popular as a pot plant because of its profusion of blooms and long period of blooming. In this there has been no disappointment.

Six months old plants grown in pots yield a large quantity of flowers, but as the plant is of a most rapid growth, it must be kept well supplied with food, and will give more or less flowers from April until autumn. But its great beauty is revealed when given an open border under glass. Then its great masses of pleasing rosy crimson flowers make a floral sheet that is dazzling, and is not one of a day, but lasts from early spring until mid-winter.

We know of no plant of late introduction that has given so much satisfaction. It has come to stay. As the individual flowers last for many days they are valuable for floral decorations both for their color, profusion, and duration. It should be treated as a conservatory plant and given a period of rest from January until March.

P. J. BERCKMANS.

Augusta, Ga.

HEATING A SMALL GREENHOUSE.

I am making plans for a small lean-to greenhouse that will be used for chrysanthemums up to December 1, closed in winter, and started in the last week of March in the place of a hotbed. It is to be 9x17 and run north and south. Can the chimney be placed in the north end? I design to heat with a small stove, running the pipe under the bench. Will it draw with the chimney in the north end? It seems to me the most of our spring winds come from the north. Could you suggest a stove? Don't want a flue. An oil stove has been mentioned, but the wicks are a care and uncertain in action. I know that greenhouses should not run north and south, but we have no other place for it.

F. N. B.

I see no reason why the chimney should not be placed at the north end of the house; it is the proper place for it. In this case the pipe from stove is to be used for heating so to have the chimney on the north end the pipe would have to run under the bench on one side, cross over at the south end and return under the other bench to the chimney. Don't let your stove be inside the house or you will be bothered with dust, and what is worse, gas. Have a small shed for the stove at the north end and let the top of chimney be at least two feet above highest part of greenhouse.

Oil stoves are very unreliable and could not with any safety be left for six or seven hours during the night. As subscriber does not want to use a flue and does not mention what is best of all in every respect, hot water, it seems he thinks of running the ordinary stove pipe under his benches. That would be highly dangerous, and liable to great variations of temperature. Use in place of stove pipe a 5 or 6-inch vitrified sewer pipe; it will last for many years. They come in two feet lengths and can rest on a brick edge ways to keep clear of the ground. The best stove would be that of the simplest construction and most direct draught as you do not want to keep the heat in the stove, as you do in a dwelling room, but you want it to pass off into the pipes.

WM. SCOTT.

WE HAVE received a prospectus of an elaborate work entitled "Favorite flowers of garden and greenhouse" to be issued by Frederick Warne & Co., of New York. It is to be published in four volumes, containing 316 colored plates, price in cloth \$30, and in half morocco \$36 per set. A specimen plate, sent with the prospectus, is very well executed.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE annual convention of the Society of American Florists will be held at Providence, R. I., August 17 to 20. The program includes the following essays: "Root galls of cultivated plants," by Prof. Byron D. Halsted, New Brunswick, N. J.; "Trees and shrubs that should be grown by every florist," by Chas. J. Dawson, Bussey Institute, Boston; "Florists as scientists versus artisans," by Prof. F. W. Rane, Agricultural College, Durham, N. H.; "Our favorite exotic plants in their own homes," with stereopticon illustrations, by Prof. Geo. L. Goodale, Botanic Gardens of Harvard University, Cambridge, Mass. There is also a whole series of papers under the general title "A year's progress in our business," covering the rose, the carnation, the chrysanthemum, decorative and greenhouse plants, bedding plants, and the retail department. The entertainments include a trip to Newport to view the many beautiful grounds there. An exhibition will be held in connection with the convention and the society offers six silver and six bronze medals as first and second prizes for cannas, tuberous begonias, fancy leaved caladiums, aquatic plants and hardy conifers in pots. A rate of one and one-third fares for the round trip has been secured from all the railroads east of Chicago and St. Louis.

ON ACCOUNT of ill health Elizabeth Fry has resigned the editorship of the *South-eastern Florist and Gardener*, which position she has occupied since its first issue three years ago.

BULLETINS 53 and 54 have been received from the U. S. Experiment Station at Brookings, So. Dakota. The first treats on "Forestry in South Dakota" and the second on "Subsoiling."

A LOVER of wild flowers found in the woods last summer a black-eyed Susan, almost double and transferred it to his garden where it is now blooming. It retains its doubling tendencies, and is quite a novelty. The petals are finely divided and nearly cover the entire head. In some of the flowers, a small dark center is preserved, but in others there is an attempt to produce petals clear to the center.

THE bloom stalks of *Yucca filamentosa* keep well in water and are very decorative in large bouquets. The long leaves of the swamp cat-tail (*Typha latifolia*), or, better still, the narrow-leaved form (*T. angustifolia*) give a suitable green to accompany it. Their creamy white bell-shaped flowers at a recent reception, caused a lady present to refer to them as "those magnified lilies of the valley." In Missouri they are called Belles of the South.

DID YOU go out into the meadows and gather a large bunch of lilies? Nearly every unopened bud will expand if the stems are placed in water. Take up some bulbs of the brighter colored ones by cutting out a piece of sod a few inches square and deep containing the bulb. Heel these in anywhere until fall, cutting off all flower buds but retaining the stems and foliage. When fall comes, and the stems are ripened off, either clean away the soil and plant where wanted or shave off the top two inches, which will include most of the grass roots, and plant the remainder two to three inches deep. As a rule they improve under garden culture.

NOW THAT all the varieties of the large flowered clematis are in bloom, visit your neighbor's garden and admire them, but don't envy the owner, for you can have them also. Since the appearance of the yet unconquered clematis disease it is a question of "a survival of the fittest." The *Jackmanni* and some of the *viticella* hybrids have the most robust constitutions, and therefore a larger percentage of them overcome the malady, but one likes to have other colors also. Make a note of the names of the varieties you admire and then make up your mind that next spring you will overcome your scruples against indulging in a lottery scheme, and go to some reliable dealer and buy some home grown plants. Get a dozen, and plant them in your garden in some reserve spot where you do not depend upon them for decoration. Treat them well, and if any develop the disease very badly, pull them up and throw them away. In a couple of years or so you will find that a few plants have grown strongly and are comparatively free from disease. Then you can move those to permanent positions. Anyone of the survivors, if strong and healthy, is worth as much as the whole lot cost originally. We know of three plants bought this spring, that were propagated in America, that yet show no signs of disease, while every one of eight imported plants put in the same time, have had several vines on each plant die back.

BEDS OF COLORED FOLIAGE.

"Sweet Briar" writes as follows in a recent issue of the *Gardeners' Magazine*, of England:

"Shakespeare wrote nearly three hundred years ago that we should find 'tongues in trees,' but I think it would baffle any tongue to fitly describe, or artist to truly depict the glorious tints that are now to be seen on every hand in our woods, parks, or gardens. My object, however, at the present moment is not to eulogise trees in general, but rather to draw attention to what may be achieved by using some of them in a dwarf form.

"Possibly many of your readers have observed in nurseries, and elsewhere, the intense and clear colors which the foliage of the various maples, elms, sycamores, poplars, &c., assume upon young trees, commonly called maidens, to what they do upon more matured trees. Now what I would advocate is this. Prepare a good sized bed, on the lawn for preference, and well exposed to the south, and here in due season plant young trees of the varieties hereafter named. After the plants are well established cut them down each year as we should osiers, and the result will be young growths clothed with vivid and handsome foliage, and there will be a grand and gorgeous mass of color. The varieties might be planted in circular masses of one kind, but if space could be afforded in one bed for all the varieties named, then two or more beds could be formed. To a practical man this idea will speedily commend itself, for we should obtain color, which is much required in spring anterior to the general bedding out, and also we should have a permanent bed, which would give us very little trouble beyond pruning and thinning out the growths.

"The kinds of trees I would suggest are as follows, commencing from the center of the bed in the order given: *Acer platanoides Schwedleri*, *A. pseudo-platanus lutescens*, Silver poplar, *Acer platanoides purpurea*, *Acer platanus Wortei*, *Quercus coccinea*, *Acer pseudo-platanus Leopoldi*, *Prunus Pissardi*, golden elder, *Acer saccharinum*, golden poplar, *Acer pseudo-platanus Prince Hendiery*, golden spiræa, *Sorbus aria lutescens*, *Ulmus Wredei aurea*, purple hazel, and variegated privet. If desired, half standards of *Prunus Pissardi* could be interspersed to break up any flatness."

For those admiring foliage color in masses the selection of material here given is good, but we would discard the idea of standard *Prunus Pissardi* and place a group of *Ailantus glandulosa* in the center, if the bed is seen from all sides, or in the rear center, if seen only from the front and sides, and not cut them so far back as the balance, thus mounding up the center with its handsome pinnate foliage. Such a bed, however, would only be successful on very large grounds.

AN INTERNATIONAL HORTICULTURAL EXPOSITION.

An international exposition devoted wholly to horticulture is being held this year in Hamburg, Germany. It opened in May and will continue to October. In the exposition grounds the hardy plants shown remain for the summer in the same positions, but in the buildings there is a succession of displays of blooming plants in season. The engraving shows one of the spring displays in which azaleas, bulbous flowers and other spring blooming plants were prominent.



VIEW IN MAIN BUILDING DURING SPRING SHOW AT THE INTERNATIONAL HORTICULTURAL EXPOSITION AT HAMBURG, GERMANY.

The Fruit Garden.

THE KIEFFER AND THE LE CONTE PEARS.

Since the above named pears have proved to be so well adapted to the climate of the extreme south, the interest in them and in pear culture has been much excited in the states of that section. The kinds common in the north are of but little use there, while those of oriental parentage, which the Kieffer and Le Conte are, are exactly suited to that climate, doing far better there than in any other part of the country. It has been known for some time that these pears were almost worthless for eating in the far north, and that the farther south it was the better was the fruit.

These good points in favor of their cultivation in the south are strengthened from the fact that unlike most other pears, they can be easily increased from cuttings. The wood may be cut up like shrub or poplar cuttings and planted out of doors in spring and hardly one will fail to grow. But as the demand for these two kinds is active, especially in Florida, cuttings do not admit of the rapid increase which is necessitated, and budding on the ordinary seedling pear stock has to be resorted to. Some objection has been made to these stocks, because in growth they are hardly as rampant as the others. But this is no objection, if the grafting or budding be done so that the scion when the young tree is planted can be set below the ground. In this case it

quickly forms roots for itself, becoming in gardening parlance "on its own roots." Where the union is made some distance above ground, the scion, because of its more vigorous growth, bulges out over the stock. In such cases trees have been known to break off in high winds.

Wherever the increase cannot be accomplished fast enough by cuttings there need be no hesitation in using the seedlings of the common kind when grafted and planted in the way described. When pear stocks cannot be obtained and apple stocks can, the insertion may be made on these, doing with them as advised with the common pear, namely, setting them low enough to allow of the scions rooting out for themselves. The use of the apple is not satisfactory, as but a poor growth results on the part of the pear, but it feeds and sustains the latter until it has formed roots for its own support.

It is a pleasure to know that these two pears, the Kieffer and the Le Conte, have proved so well adapted to the south, as it enables fruit growers there to add to their fruit lists something good for home use and profitable for other markets, both sorts being good shippers.

Philadelphia. JOSEPH MEEHAN.

FALL BEARING RASPBERRIES.

To many persons the fruit of the raspberry in the fall is a luxury, coming as it does when no other fruit of this nature is to be had. There are but two sorts that have proved of any value, of about a half dozen kinds tried, the Catawissa and the Belle de Fontenay.

At one time the latter sort was much grown by amateurs in these parts, but I have not found many persons growing it of late. Frequently at the horticultural shows held in September, very fine dishes of this berry were to be seen. When shown alongside of the Catawissa they were as a rule far superior to it. Nevertheless, perhaps because its merits are not so well known to the gardeners of to-day, it is now rarely met with, the Catawissa being grown almost solely. Another variety, called Marvel of the Four Seasons, a French kind, was tried, but did not prove of any value.

To have these fall bearing sorts produce well they must be cut down in the spring, so that vigorous young canes will grow, as from these the crop of fruit is to come. The stronger the canes, the better the crop of fruit, hence the importance of applying plenty of manure to the ground, and of keeping up a cultivation of the soil while the plants are growing.

It is not impossible to have fruit on ordinary raspberries when treated as these are, though there is something in the nature of the two kinds mentioned which seems to fit them especially for fall bearing.

Philadelphia.

JOSEPH MEEHAN.

THE DWARF JUNE BERRY.

The dwarf juneberry, which at one time was planted solely as an ornamental flowering shrub, has now found a place in the garden among small fruits, a position it is well entitled to.

I have found some confusion existing in regard to the identity of this bush. It

was brought about in this way. Several years ago there was one Staples, who advertised to a great extent the "blueberry," and he succeeded in distributing his plants largely. Whether through ignorance or not it is not known, but these "blueberry" plants, which should have been *Vaccinium corymbosum*, were juneberries, *Amelanchier alnifolia*. It is to be presumed that it was ignorance, because what he did send out is a much better thing than what he advertised.

The dwarf juneberry has been esteemed for a long time in the west, where its home is. Since the distribution by Staples many more persons have it in their gardens. The ordinary amelanchier is well known in Pennsylvania, where it is common in low woods. It has several common names, being called Indian cherry, shadberry, snowy mespilus and service berry. The flowers are snowy white, and give way to the fruit, which hangs in currant-like bunches. It makes excellent preserves and is good eating out of hand.

The common form grows to twenty feet sometimes, but this dwarf western one is but from two to three feet high. It is, certainly, well worthy of planting, on trial at least. I have never found a person who did not like the taste of the fruit. If desired for a situation where there is room for it to grow, the large grower may as well be set as the dwarf. Both are most ornamental when in flower. Philadelphia. JOSEPH MEEHAN.

Miscellaneous.

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Their use in the middle west I take to be very limited, at least I have seen but the one example cited, but it was good enough to make a lasting impression as well as create a wish to see the effect duplicated. *Solanum Warscewiczii* has large, handsome, spiny leaves and spiny stems; *S. Guineense* has effective cut leaves and bears numerous deep blue, glossy berries; and *S. atropurpureum* also has cut leaves, they as well as the entire plant being purplish in color and spiny. The three are harmonious in habit, foliage and coloring, and their style fits them for use in connection with architectural features. Their culture is simple, that required by their relative, the common tomato, being what they need, so that any one who can get the seeds or the seedlings of these desirable half hardy perennials can easily have an attractive and artistically good mask planting which it would seem might well be supplemented by using some of the pretty and free flowering white or blue flowered climbing solanums trained on poultry netting at the back of the planting or in a corner formed by foundation wall and steps.

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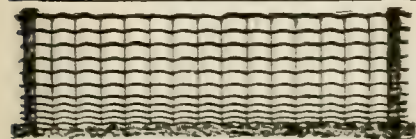
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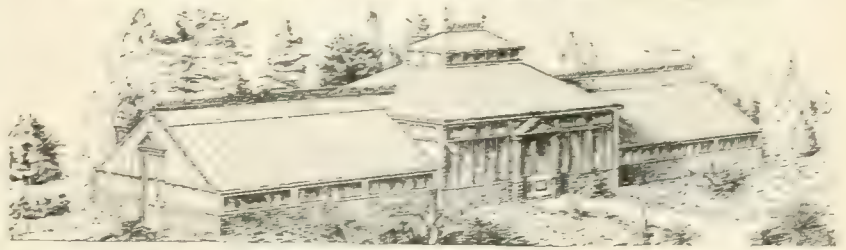
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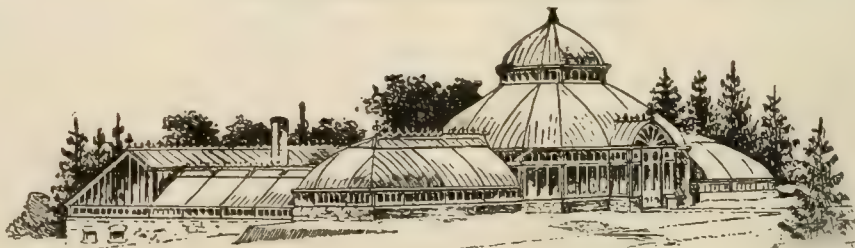
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A HEDGE OF BERBERIS THUNBERGII.

The old time hedges of arbor-vitæ are, in the west at least, slowly passing away. The necessary care to keep them clipped and in form, the breakage during winter by the heavy wet snows, the liability to damage by dogs or other animals, and the impossibility of fully restoring them, have deterred those starting new plantations from employing them.

Other aspirants for the position have sprung up, and none are more worthy of selection than this Japanese barberry, especially where a low hedge is desired, either as a dividing line between city lawns or bordering a road on suburban grounds. Its growth is close and compact, yet devoid of that artificial effect a clipped hedge produces. While its deciduous nature robs it of its verdure during the winter months, its vividly colored fruit fully compensates for that deficiency.

Early in the spring it sends forth its bright green leaves, carrying them in good form all summer and then coloring them magnificently in the fall. It requires but very little trimming. After it is once established, a slight clipping here and

there, where some shoots are too rampant, suffices. It is, however, capable of being clipped into almost as compact a form as the arbor-vitæ if desired. The hedge illustrated is one planted three years ago on the grounds of Mr. A. Tracy Lay, Highland Park, Ill. One view is from the porch looking down on the hedge, the other shows the hedge at a point where the drives join the public street.

NOTES ON TREES AND SHRUBS OF THE SEASON.

The *Aralia spinosa* is known to most all planters and is much appreciated for its immense panicles of greenish white flowers, which are in perfection during the latter part of August. There is in cultivation a closely allied tree, *Dimorphanthus Mandshuricus*, which closely resembles the aralia, but which is in flower always a week or more in advance of the other. Late botanists make of this a true aralia. The prickly stem of these small trees have no doubt suggested the names "Hercules' club" and "Devil's Walking Stick," both of which are common ones for it in this city.

Viburnum Sieboldianum, which now displays its ripe fruit, is a large shrub, very ornamental at all times. Just now

the clusters of fruit display two colors, pink and black. The latter is the final color. First green, then pink and lastly black, is how the rotation is fixed. When trimmed to one stem when small it grows to be quite a small tree in time.

Rhus Osbecki, or *semi-alata* as it is now called, has been mentioned before but will bear referring to again. Its large heads of white flowers are in their best display now. And all that have a collection of trees and shrubs know what a dearth of flowers there is at this season. This is from China and singularly, it differs from our native sorts in not having beautiful foliage in the fall. But its midsummer flowers make up for it.

Recently I called attention to the fact that cutting down some shrubs in spring made them flower the stronger at this season of the year. I observed another point in connection with the subject today. Some plants of *Vitex agnus-castus* which were cut down are not in bloom yet, while old plants, *unpruned* in spring, are now in full flower. And this leads me to another subject which many gardeners know of, but perhaps not all. If the tops of growing shoots of *Hydrangea paniculata grandiflora* be pinched off about the close of June it causes a later crop of flowers than if untouched, some-

times quite a month later. At the same time it must be said that as two shoots take the place of one, there is an increase of one-half in the number of flower heads, and a corresponding decrease in the size of each head. Philadelphia florists practice the pinching back of some plants, to prolong the crop.

Viburnum cotinifolium has been mentioned in previous notes, but is referred to here as its clusters of berries now make a unique display. On vigorous bushes large clusters of perhaps 150 berries each are common, the berries rather closely packed together. Some bushes observed today were showing perfect fruit, but three colors were to be seen on some clusters, viz, pink, cherry and black. I am sure every one would be pleased with this shrub, both for its early white flowers and its midsummer fruit. It is a native of the Himalayas and while resembling *Lantana*, an English species a great deal, it is rather a better one. It might be called an improved *Lantana*.

Passing a small group of *Acer*

growth, but the present season has brought out a somewhat continuous growth, hence the beauty spoken of. This tree has beautiful shining green leaves when matured and it makes an excellent lawn tree. I remember an exceedingly fine specimen of this tree at Park Place, Henley-on-Thames, England, which I saw three years ago. It was some nine feet in circumference with an immense spread of branches.

Philadelphia.

JOSEPH MEEHAN.

HETEROMELES ARBUTIFOLIA.

Heteromeles arbutifolia is a most beautiful shrub and I have often wondered that it is not more extensively cultivated. It is a very rapid grower and forms a dense rounded shrub, generally attaining a height of about eight feet. It has showy clusters of white blossoms, which are in full bloom about the middle of July; these blossoms are quite fragrant, but it is later in the season that this beautiful shrub is in its glory. About Christmas it is fairly breaking with a heavy load of

mate the value of this shrub, as travelers often speak of it; and the specimens of branches with fruit which are sent on here occasionally attest its ornamental character. But what are we poor northerners to do when the Pacific beauties refuse to adorn our grounds? We know of these good things, and have tried them but they want too much coaxing, and then only rarely will they do. It is not always temperature, but often some other cause. Still we should think that south of Philadelphia it might be grown. Those who wish to try will find this shrub in many catalogues under the old name of *Photinia arbutifolia*, which, in fact, the latest authorities make the correct one.

There is a Chinese species, *Photinia serrulata*, which is said to be hardy as far north as New York City. It too is a beautiful evergreen. Mr. P. J. Berckmans of Augusta, Georgia, says it does nicely there, but that its habit of flowering so very early in the season subjects it to the risk of being caught by late frosts.



PLAN FOR GROUNDS OF SIX ACRES.

Ginnala today, I was impressed with the beauty of the trees at this season when displaying their clusters of seeds. There is a little color to the seeds, such as the leaf stalks display, and then the small divided leaves are pretty. In the spring I have not seen that this species is much prettier than *campestre*, but it certainly is at this season of the year. As it makes but a large shrub, though it can be grown in tree shape, it is fitted for using on a small place.

I have already used some adjectives in referring to some of the berried shrubs but have reserved a few to apply to the *Cornus Mas*, known as the Cornelian cherry. The fruit is now ripe, and it is larger than many cherries, looking more like small light red plums. When full of fruit, as most bushes are this season, a beautiful sight is presented during the closing days of July and through August. This is frequently seen as a large, not well shaped bush. It needs pruning, which it stands well, then a compact bush is secured. This is often called English dogwood, but though European, it is not English.

Acer colchicum rubrum, known also as *A. latum*, is more attractive than usual on account of its blood red young growth. This color is natural to the young

the most brilliant red berries imaginable, the berries being so vividly colored as to almost sparkle in the light; these berries are quite good sized, and in California they are extensively used about Christmas time in decorating churches, homes, etc. The leaves are a polished green, and very showy; plant is an evergreen.

Noticing many good articles on ornamental plants in GARDENING I have long watched to see if some person would not call attention to this grand shrub, but not seeing that anybody has done so, I have taken the task upon myself to give the readers of GARDENING a short description of it.

In propagating it the seed should be sown during the middle of the winter, as soon as ripe. They could be sown either in boxes or in the open ground; this latter plan would no doubt be preferable as the freezing weather would no doubt help the seed to rapidly germinate. This shrub in its native home inhabits the mountains of California, at elevations of between 500 to 3,500 feet above sea level. It generally reaches its greatest development on exposed sunny points.

Grizzly Flats, Cal. S. L. WATKINS.

Our correspondent does not overesti-

Referring again to Pacific coast shrubs, it won't do to give up with the non-success of the first trial of some of them here. For some time the Lawson's cypress, which comes from Oregon, was a failure about Philadelphia, but at last a plant among a lot of others got through winter after winter all right. Noticing this, plants were propagated from it and now the good folks of that village have all the hardy Lawson cypress they want.

Landscape Gardening.

PLAN FOR GROUNDS OF SIX ACRES.

The accompanying plan was made for the grounds of John Markle, Esq., Jeddo, Pa. As these grounds were surrounded by the various buildings of a large colliery the first consideration was to make the grounds as private as possible and shut out the unsightly objects that were in view in every direction, although I hold that privacy is always as desirable on the lawn and in the garden as it is in the living rooms of the house, and secure for the family and its friends much freer



HEDGE OF BERBERIS THUNBERGII.

and greater enjoyment than when the grounds are fully exposed to the highway. In the present instance privacy was secured by massed planting of shrubs and by a hemlock hedge completely surrounding the grounds.

The landscape gardener often finds that his lawns are spoiled, in spite of his advice, by being cut up for flower beds by some ambitious gardener anxious to show his skill in making colored lines of coleus, alternantheras, and other tender plants. Such a contingency is provided for in this plan by making an enclosed formal garden for bedding plants in summer and Dutch bulbs in spring and this garden in no way spoils the repose of the lawns. It is enclosed by a hedge of Siberian arbor vitæ and massed planting of shrubbery and must be visited to be seen.

EXPLANATION OF PLAN.

- 1, 1, 1, 1, 1, Massed planting of deciduous and evergreen shrubs.
2. Specimen shrubs.
3. English beech.
4. White-leaved linden.
5. Nordmann's fir.
6. Cut-leaved Japan maple.
7. Group *Aralia japonica*.
8. Scarlet maple.
9. *Eulalia gracillima* and yuccas.
10. Group of small deciduous trees.
11. Nordmann's fir and Colorado blue spruce.
12. Specimen shrubs, evergreens and Chinese magnolias.
13. Deciduous trees and evergreens.
14. Group Chinese and Japanese magnolias.
15. Scarlet oak.
16. Scarlet oak, weeping cypress and weeping Norway spruce.
17. Sugar maple.
18. Tulip tree.
19. Fern-leaved beech.
- 20, 20. Pin oaks.
21. Evergreens and white birch.
22. Evergreens, rhododendrons and *Kalmia latifolia*.
23. Formal garden for bedding plants and spring flowering bulbs.

24. American beech, liquid amber and tulip tree.

25. Scarlet maple.

26. Group Japanese crab apples.

27. Wier's maple, pin oak, English beech, black walnut and white oak.

28. Tulip tree, *Magnolia macrophylla*, and scarlet maple.

29. Group deciduous trees.

30. Mass wild crab apples.

31. American elm.

32. White, scarlet and pin oaks.

33. Summer house.

34. Rockery on both sides of path leading into woods.

35. Group of evergreens.

36. Lombardy poplars.

37. Border for annuals.

38, 39. Border for hardy perennials.

40. Border for hybrid perpetual roses.

41. Bed of *Arundo donax* and *Eulalia gracillima*.

42. Lilacs, assorted.

J. WILKINSON ELLIOTT.

Pittsburg, Pa.

Orchids.

A DOZEN EASILY GROWN ORCHIDS.

Will you kindly give me the names of about a dozen varieties of orchids which are easily grown, also method of treatment. I have a small greenhouse, recently erected, which is under my individual care.

Mrs. H. C.

Having in view ease of culture, free blooming habit, attractive flowers, blooming at different seasons and affording a nice variety I recommend the purchase of the following, about September 15 to October 1:

No. 1. *Odontoglossum grande*; 2. *Cattleya Percivaliana*; 3. *Lælia anceps*; 4. *Cypripedium insigne*; 5. *Cœlogyne cristata*; 6. *Cattleya Trianae*; 7. *Lycaste Skinneri*; 8. *Dendrobium nobile*; 9. *Cattleya Mossiæ*; 10. *Oncidium leucochilum*.

And, if the greenhouse proves to be a warm one the coming winter, or to have a nice warm, rather moist corner in it, I would add next spring, 11. *Oncidium papilio*, the butterfly orchid; 12. *Calanthe Veitchii*, and 13. *Cypripedium Lawrencianum*.

The first ten will bloom in about the order named when purchased as above. Nos. 1, 2, 3, 6, and 7, should have buds or bud sheaths when received, and should be purchased "in bud." 1 and 2 should bloom about November, followed by 3, then 4, 5, 6 and 7 through the winter, 8 towards spring, or earlier if kept too warm. 9 is one of the most gorgeous of the cattleya family, and, in spring blooms (unlike 2 and 6, which bloom from the freshly made bulb), from the bulb made the season previous. 10 throws a long (often 6 feet) graceful spike with numerous side branches. 7 has large waxen flowers coming from the base of the last made bulb, as do also those of 1 and 5. After it has given several flowers, the spike should be cut from No. 11 or it may bloom itself to death or into a sickly condition.

Until the bloom is over, each sort but No. 8 may have reasonable watering until the bloom fades; then water must be withheld gradually in order to afford to the plant its natural and necessary season of rest; but do not permit any shriveling or withering of either bulbs or leaves. At the first sign of suffering, give a good thorough watering, but do not water often, until the plant starts to grow. When the growths begin to push (growths *not* roots) give a fresh top-dressing of sphagnum moss, and gradually renew watering, and also sprinkle floor and paths. All orchids thrive with a moist atmosphere, but proper ventilation is necessary, especially in the growing season, but direct currents of air should not fall on the plants.

No. 2 is best grown on a light wooden raft, with but a moderate amount of peat fibre and moss, and hung near the glass roof. No. 8 is one of the best of the den-



CLUSTER OF LAPAGERIAS ROSEA AND ALBA.

drobes, and is a deciduous plant, and often blooms from its old naked stems. It gives one, two or three flowers at the nodes of its long pseudo-bulbs. As the growth approaches completion, keep the plant as cool as possible without too much exposure or risk of chilling, and give only sufficient moisture to prevent bulbs from shriveling badly. Do not try to hurry it to bloom, or, instead of getting flowers, you will probably find the bulbs will turn into young growths, by means of which, however, new plants may be propagated the second season. Its hybrid, *D. Ainsworthii*, is even finer than *D. nobile*. The two make a beautiful appearance side by side.

During July, August and to approach of cool nights, put No. 5 out of doors in a partly shaded place and water freely. On approach of cool nights, bring into greenhouse, and grow on as usual. Plants that bloomed but sparingly with me under the usual method, gave abundant flowers with the treatment recommended.

No. 4 likes similar treatment, but any orchid when put out of doors should be set on ashes or something similar to keep worms out of the pots.

Should your correspondent wish, I will give, at a future time, directions for growing calanthes, which should be treated differently from the majority of orchids.

WM. H. CHADWICK.

The Greenhouse.

THE LAPAGERIA.

The lapageria is one of our most beautiful cool greenhouse climbers. Those who have never seen it in flower have from the illustration but a poor conception of its beauty. The individual flower is as rich as the most lovely orchid. In these days when all flowers used either in vases or in bouquets must be long stemmed, or at least on their own stem, the lapageria will not readily find a place, but in the very choicest and richest of decorations, to grace a mirror or picture, or add a charm without hiding the beauty of a statue, it has no equal.

L. rosea was introduced to Europe from Chili in 1847. Its pale sister, the still more beautiful *L. alba*, was not known till 1854. It is identical with *rosea* except in color. One other variety is described, *L. rosea superba*, which is merely a magnificent form in size and color of the *rosea*. It is said that by crossing the red and white flowers you will obtain from the seedlings many intermediate colors. They are often raised from seed but are usually propagated from layers. Strong firm shoots of two or three feet in length when layered and

covered with soil make strong plants, and any one beginning the cultivation of this fine plant is advised to start with a healthy vigorous plant, as attenuated plants seldom grow satisfactorily. I may mention here that an instance of its decorative qualities was well demonstrated at the magnificent show of the Mass. Hort. Society held during the convention week in Boston, 1890. There was great rivalry among florists and gardeners for the prize for the best mantel decoration. The first prize was awarded to the late David Allan. All the decorations in that line were beautiful and rich but no feature of the prize winning decoration contributed towards its success more than the grand sprays of *Lapageria rosea* and *alba* with its pendent waxy flowers; they were the admiration of all.

It is a cool greenhouse plant, even standing a few degrees of frost without harm, and likes a rather moist atmosphere. In the extreme south of England and Ireland they are planted against walls and trellises outside and are seldom injured. In the lofty rotunda or glass vestibule, as it may be called, to the entrance of Mr. Veitch's wonderful nursery at King's Road, Chelsea, London, the roof is largely covered with lapageria. Twelve years ago the writer saw it there with thousands of flowers and the late Mr. Court remarked as we looked up at it: "That is often frozen tight in winter." It is not essential to give it any frost; a temperature of 40° to 50° in winter, and as cool as possible with plenty of shade in summer, will do very well.

They can be grown in large pots or tubs and trained on a wire frame, but planted out in a border is their proper place, and trained to a trellis on the wall. Their flowering season is from end of July till November. The soil used by European gardeners for growing lapagerias is three parts fibrous peat to one of loam, with about a tenth of the whole sharp sand or broken up charcoal. It is difficult, or almost impossible, to get the same quality of peat as they have in many parts of Europe, still we know that many plants can be grown without peat where once it was considered indispensable. So in place of peat use loam, but let it be as fibry as possible and don't be afraid to add plenty of sand and charcoal.

When growing the lapageria likes plenty of water at the roots and at all times except when in flower should be daily syringed. There is no more important part of the culture than perfect drainage of the soil. If in a 12-inch pot at least one-fourth should be drainage of broken brick or crocks. If in a border, say 2x4 ft. and 2 feet deep, six inches at the bottom should be of some material to let the water pass freely away.

Slugs consider the young shoots (which much resemble the young growths of *Asparagus plumosus*) a choice delicacy, so look out. Mealy bug, scale and thrips, and in the tender growths green fly, are its insect enemies. A mild fumigation occasionally will keep down the latter and a daily syringing will do much to prevent the others.

WM. SCOTT.

Roses.

A HEDGE OF CRIMSON RAMBLER ROSES.

No new plant of recent introduction has attained such widespread popularity in a short time as has the Crimson Ram-



HEDGE OF CRIMSON RAMBLER ROSES

bler rose. Its extraordinary vigor, its freedom and brilliancy of bloom, its hardiness and general adaptability give it a position in which it stands without a rival and everything claimed for it when introduced has been more than realized.

Its availability as a hedge plant has been demonstrated by Mr. Wm. Duckham, gardener on the estate of Mr. D. Willis James at Madison, N. J., where a hedge 135 feet long was planted in May, 1896, and in June, 1897, thirteen months after planting, presented the fine appearance shown in our photograph which was taken on June 20. The plants when set out were from pots, on own roots. The shoots are tied to a wire support, stretched between iron posts. About the time that the photograph was taken there were counted 6293 clusters of bloom.

The Flower Garden.

CENTAUREA MARGUERITE.

In reply to Mr. Egan's inquiry I will give my experience with *Centaurea Marguerite*. My first attempt to grow it was in '94, having received seed from private sources. In '93 I purchased seed of the dealers and sowed both, obtaining one plant that matured two seed balls and then died. In '95 the failure was repeated.

My garden is sandy loam verging in portions to gravelly loam. The sun is very hot and constant and no reliance is placed upon rains. Like all Colorado soils it will grow anything when put under water. The centaurea had full exposure to the sun, and the ground was well fertilized with rotted cow manure all the three years. There were changes in amount of water used and amount of fertilizer, but to no purpose.

In '96 an attempt was made to change all the conditions. New ground was broken, and I carted in soil from the prairie where furrows had been ploughed each side of the railroad, to prevent fires

spreading from the sparks. This soil or semi-turf is adobe clay mixed with sand blown upon it, and also the roots of buffalo and gramma grass. It sticks to one's boots when wet but will not bake hard. I put eighteen inches of it on the north side of the coal house and planted four feet away from the north wall, giving about one-fourth sun, and used no fertilizer. No plants died down, and they were a thrifty lot.

This year is a repetition of '96. We have cut freely of this lovely flower and none died. Two swallows don't make any kind of a summer, but it seems fixed in my mind that this centaurea needs shade and very little fertilizing. Whether the adobe clay or the considerable mixture of sand, or both, were factors I cannot say. Certainly no soil could be more "virgin soil" as it has never been manured nor cultivated since the creation.

All the seed from the dealers has been of low germinating quality, sprouting very unevenly. This year I am saving my own seed, although I have a lot of *C. sauveoleus* near by that may hybridize the Marguerite.

H. E. GATES.
Colorado Springs, Colo.

Since Mr. Egan's inquiry regarding *Centaurea Marguerite* appeared I have watched my plants closely for the trouble he mentioned. This spring I put out 20 plants and now five are missing. Four of them were undoubtedly destroyed by cut worms, as they were perfectly fresh and healthy when I found them. The fifth had the appearance of withering in the way he described. The stem was partially dried up and the leaves were drooping. I am not sure that this one had the disease, as it also seemed to be cut, but give it the benefit of the doubt. During the last week the remaining plants have done remarkably well. They have formed stocky little bushes and are fresh and healthy and covered with buds and bloom. My wife called me in this noon to look at some flowers she had picked three or four days ago, and I found that she had in the parlor a vase full of these *C. Marguerites*.

She said they were handsomer than when she picked them. I measured them and found some of the flowers two and a-half inches in diameter and none much under two inches.

My soil is very sandy, and to improve it I mix coal ashes with it. I should say that it now contains from $\frac{1}{8}$ to $\frac{1}{4}$ of sifted ashes. All was not put on at once but a little added every spring. I have my ashes sifted and spread over the ground, putting the most where I find the sand predominating. I think the ashes help to keep down the cut worms with which this soil is infested to an unusual degree. I have imagined too that they were a great help in keeping the moisture in the soil. I shall be pleased a little later to give a more definite account of how these plants have grown and finished the season.

WM. J. STEVENS.

Marquette, Mich.

PLANTS FOR EARLY SPRING.

When should the following be planted: *Arabis alpina*, *Trillium grandiflorum*, *Aubretia violacea*, *A. Leichtlinii*, *Primula Sieboldii*, Forget-me-nots and *Saxifraga cespitosa*. Can I buy plants or must I sow seeds? Is it too late for seeds?

A. D. P.

All the plants named should be planted by the end of September. To have forget-me-nots in good shape they will have to be wintered in a cold frame. Plants that bloom so early in the spring are best set out early the summer before. In this way the plants have time to get established and are more apt to bloom.

Yes, you can buy any of the plants mentioned and no doubt this would be your best plan, except with the forget-me-nots, and you have time enough yet to sow them.

It is now too late to sow seeds and expect flowers next spring. But you can sow seeds of all now and you will have a good stock of plants to grow on for another year. The saxifraga and Siebold's primrose are a little difficult to

raise from seed, but the arabis and aubretias will germinate in a few days. If you have grown forget-me-nots in your garden this summer no doubt you could gather enough self-sown seedlings to fill your frame. They will be just as good as those from the seed you buy. Our garden and lawn is full of them.

DAVID FRASER.

LILIUM AURATUM.

A few years ago some florist in an article (in GARDENING, I think,) mentioned the fact that he took the bulbs of *Lilium auratum* left over after the season of sale, and wrapping them in sphagnum moss planted them. Naturally they were the culls, and weakened by long exposure to the atmosphere. He further stated that they did well.

My experience with this bulb is probably the same as that of many others. Generally the first season after the planting is a successful one, but only a small percentage can be relied upon the second year, and each successive year thereafter the number that appears above ground grows less and less. On this account I have been renewing my bed every second year, although those freshly planted last fall are in a worse condition this year than usual and will be discarded this fall.

When planting fresh bulbs last fall in the bed devoted to them, I selected about a dozen of the best of the old lot, and tried the experiment of wrapping them in moss as suggested by the article above referred to. I planted them on a knoll of clay loam, not over six inches deep, and threw some rough manure over them in winter. I was quite surprised this year to note the continued healthiness of foliage and flower, and forgetting that I had mossed them I attributed this feature to the nature and condition of the soil, but was somewhat puzzled because one feature supposed to be essential to success with all lilies was absent, viz., a cool surface mulch at the roots. They were planted at the foot of a solid board fence, just east of it, with the ground perfectly bare above them. No attention whatever was paid to them other than keeping them free of weeds.

To-day I took one bulb up in order to examine its condition, and then found the moss I had forgotten about. All indications pointed to a healthy condition of affairs and a prolonged healthy life. It certainly will cause me to wrap in moss those I plant this fall. W. C. EGAN.

KILLING THISTLES AND OTHER WEEDS.

The best way to kill any living plant is to cut it down continually as it sprouts, so that it cannot make a single leaf, for without foliage it must die. The roots of a plant cannot long exist without it has a growing top. Each part is dependent on the other. If the foliage be stripped off as fast as it appears the plant must die in time. In this way thistles, poison vines and similar noxious plants may be effectually destroyed.

The first chopping down of such plants as named should be in June, before the foliage has had a chance to perfect the sap for the support of the plant. Let the chopping down be made close to the ground, then as soon as fresh shoots appear, treat them the same way. The majority of plants will succumb to this treatment the first season, but a few, the Canada thistle among the number, will sprout again the second season, though more feebly than before. But persistency in the cutting down process will kill this or any other weed in time. It has been

declared by some writers an impossibility to kill the Canada thistle in this way, but those who fail have not persisted in keeping the foliage cut off. If leaves are permitted for awhile it means that an extension of its life has been given the plants.

Many of the best shade trees in cities are ruined by being pruned so severely that not enough foliage can be made by the remaining branches to sustain the trunk. These lessons can be borne in mind both when plants are to be destroyed and when they are to be preserved. To remember that foliage is necessary to the life of a plant, will suffice to guide one to correct action.

Philadelphia.

JOSEPH MEEHAN.

NOTES ON GARDEN ANNUALS.

Many of the annuals are now past their best but with a little exertion the garden can be kept gay by keeping a stock of young plants on hand. As soon as the early sown ones are past they should be rooted out and their places filled with new stock. In this way the garden can be made to look well the whole season.

The ten weeks stocks are now past but they were very fine while they lasted. We grew twenty-eight varieties of them and among the best were Farquhar's Boston Florists' Double White. This is without doubt the finest white stock we have ever seen. The plant is branching and very double, the spike long and compact and one of the best for cutting purposes. Sutton's Snowball, S. Mont Blanc, S. Perfection and Princess Alice were among the best of the other varieties. Dwarf Bouquet in various colors is also good for edging as it grows only about nine inches high, forming a compact little plant with very double flowers.

Antirrhinums are now at their best and will last the most of the season. They require good soil and should be grown largely in every garden. We are growing fifteen varieties of them, and for something that will bloom the most of the season I would class them at the head of the list of annuals. They are splendid for cutting and last a long time in water. Sutton's Intermediate, forms a compact bush about a foot high, the flowers large and in many colors. *Grandiflorum* is the tall form, growing about three feet high. This is the finest for cutting as the spikes are long and well filled, a very showy variety, the markings in the flowers being all that could be desired. We will propagate a lot of these to winter over in frames, thereby inducing much earlier blooming next summer. Or, they can be grown in pots for house decoration.

In Begonia Vernon, Sutton's Reading Snowflake and S. Crimson Gem, we have something that lasts the whole season, always in good shape, and flower freely. They make a good edging for tall growing stuff or are good in a solid bed and will grow in the open fully exposed to the sun, or will do just as well in the shade. And, if they are taken up in the fall before frost comes, and potted up, they will bloom the whole winter long.

Chrysanthemum coronarium, white and yellow, are now in good flower and will last till frost. *C. segetum grandiflorum* has heads of bright yellow flowers fine for cutting and they last well in water. *C. Burrigeum* has very beautiful flowers with crimson, white and yellow petals. All of these are free flowering annuals growing about three feet high. They like plenty of room to grow as they form quite large bushes.

Centaurea cyanus minor (Cornflowers)

are lovely annuals and much prized for cutting. They are very free flowering and last the whole season. Candytuft Improved White Spiral is the largest flowered sort we have ever seen. The spike is long and well filled, the color pure white. This does not last much after July unless a second sowing be put in about the 15th of June. The annual coreopsis are a free flowering class of plants that last the most of the season. *C. Drummondii* and *C. coronata* are fine for cutting and make a showy plant for the mixed border, color is yellow.

Dianthus Hedderwigii is a desirable plant to have in the garden. They are now getting past their best but they have given flowers in abundance. Some of the good ones were The Bride, white; Salmon Queen, pink; Rosy Morn, in various colors; Sutton's, rich crimson, and S. Superb, in mixed colors. The double sorts flowered well too but we do not like them so well as the singles they are so stiff. *D. chinensis* are all double and make a good show, including all colors. With us they live over winter in the garden with a light protection, but they are not to be depended upon and it is best to get up a new stock each year. In this way the plants are of an even size but the old ones flower the earliest.

Sutton's special mixture in gaillardias has given us many colors. The flowers are large and borne in great numbers. This lasts the most of the season. In *Calendula officinalis* we have something that is always in flower. They are showy in the garden and can be used in either the mixed border or in solid beds. The colors are lemon yellow and orange yellow. Helichrysums in mixed colors give one all the winter flowers desired if cut when opening and hung up to dry; they make nice bouquets for the winter. They are also good for the mixed border as they are of a free flowering nature.

Gypsophila elegans has leathery lilac flowers that are much sought after for bouquets, for which it is very desirable. The double jacobea flowers very freely. The flowers are small but as they are borne in clusters they are well adapted for cutting and last a long time. The white and rose colored ones are the showiest. The godetias flowered freely in the early part of the season, but the late rains have rotted them and we will have to replace with dwarf nasturtiums. *Lobelia compacta*, white, blue and purple, makes nice little plants for edgings, but they don't like to be grown in the full sun, a half shady place is best suited for them. They are still nicely in flower but as a rule they don't last much after the end of July.

The leptosiphon is another nice edging plant. They are of a trailing nature and very free flowering, but like the lobelia they are good only in the early part of the summer. The Emperor larkspurs in four colors are showy and nice for the mixed border, and useful as cut flowers. The white and different shades of blue are the best colors. They grow about two feet high. The annual lupinus makes a charming border plant and flowers freely. They are of many colors but the white and blue are the best. They grow about two feet high.

Marigolds in great variety keep the garden gay the whole season. The miniature varieties are very free and as they are dwarf they make nice edgings for the taller sorts. The single Legion of Honor and Queen of Dwarfs, in the early part of the season were one mass of flowers, but since our late rains they have left off flowering and are making a rank growth,



GLOXINIAS GROWN BY MR. T. HOGAN, GARDENER FOR MR. E P WILBUR, SOUTH BETHLEHEM, PA. [SEE PAGE 361.]

but they will give us plenty of flowers in September and keep it up till frost. In the African sorts the dwarf ones are the best for the garden. These grow only about eighteen inches high and come in flower earlier than the tall sorts. *Nemesis strumosa Suttoni* is a handsome free flowering annual which grows about a foot high. This year we have a great many new colors, which range from yellow to deep pink. They are well worth a place in every garden.

The dwarf and tall nasturtiums give us all the cut flowers we want. We grow them on our raised narcissus beds, as they always do best there, in poor, rather dry soil. Petunias in variety are making a good show as they generally do. Their free flowering nature commends them to all. The Giants of California, are all that could be desired, the flowers being large and the markings beautiful. Penstemons may be classed among the annuals as they bloom the first season if sown early. They are a showy class of plants and their long spikes of various colored flowers are suitable for cutting. We raise them from cuttings put in by the 15th of September and winter the young plants in a cold frame.

Phlox Drummondii should be grown largely by all. It is one of the most satisfactory annuals we have. The dwarf compact varieties are not so good for cutting as the *grandiflora* sorts but are nice for edgings. A second sowing of these should be made in order to have plants in flower all summer, as the early sown ones are now about past. *Portulacca* comes up every spring from self-sowings. We let it carpet the edge of the walks and its flowers very freely. The miniature sunflower is an indispensable annual for the garden. Where cut flowers are in demand its small yellow flowers on long stems are very desirable. A few plants of the tall sorts here and there in the garden are not out of place and can be placed to have a telling effect. We have some of them over fifteen feet high, crowned with a dozen or more flowers and these were from self sowings.

The giant yellow and giant white Sweet Sultan are now a mass of flowers and they will bloom the whole season. They are very showy and the white one is very valuable for cutting, it lasts so long in water. *Silene*, double white and *S. Bonetti*, dwarf pink, make nice edging plants. They grow only about four inches high and they flower so freely that

the plant is almost hidden. The sweet scabiosas in various colors have been in flower for sometime. They are one of our pet plants and we grow a great many of them. Nothing could be better for cut flowers and we use them largely for this purpose. *Torenia Bailloni* and *T. Fournieri* bloom freely when planted out but are best grown in say 6-inch pots and plunged out. In this way they flower more freely. They are also well adapted for greenhouse decoration in summer.

Verbenas flowered freely in the early part of the season but since the rains they have rusted badly and when once they do that it is hard to get them clean again. *Whitlavia gloxinoides* and *grandiflora* are now past, the rain rotting them badly, but a second crop coming on will give us flowers till frost. Zinnias are fine for a mass of color but not much thought of as cut flowers, they are so stiff; but they flower so freely and last so long that nothing is showier or easier to grow. *Z. Haageana* has smaller flowers and does not grow so tall, it also flowers very freely.

These are a few of the annuals we grow; most all common sorts but we have a many more; all desirable and we may speak of them later. We have a great many asters in great variety but they are not all in flower yet. Some of the new branching kinds are all that could be desired. The flowers are large and numerous.

Mahwah, N. J.

DAVID FRASER.

HERBAGEOUS PLANT NOTES.

Copious rains and moderately cool and cloudy weather have greatly improved the appearance of the herbaceous borders, which in the prolonged excessive heat early in July suffered greatly with us for want of water. Many beautiful things are in full flower now, among them *Aconitum napellus* is making a good show in the border. It is one of the easiest to grow and multiplies very fast; a mass of new tubers are formed every year around the older ones and frequent separating and replanting is necessary for the production of largest flower spikes, though where plenty of room is allowed, they may be left alone for some years, especially where they have abundance of moisture. The blue flowers come on long, erect, often branched spikes, and are set closer than in most other kinds. As a cut flower it is also very useful and lasts well in water.

Eryngiums are at their best during the first half of August, though they will continue in good shape for some time to come. The peculiar steel blue color of the flower heads is exceedingly attractive; many of the species show the same coloring on the upper half of the flower stems. These plants succeed well in almost any position, are ornamental in the borders as well as in the shrubbery but should have the benefit of full exposure to the sun. *E. amethystinum* is highly colored, but the best of all is *E. alpinum*; none of the rest can compare with it in richness of coloring; it is rarely found true to name in our country, various kinds being offered under this name.

Epilobium hirsutum is a continuous bloomer from June or July to September, the pretty pink flowers produced on the ends of the many branchlets with which the main stems are furnished from top to bottom; the foliage is shorter and more blunt than that of *E. angustifolium* and the habit of the plant is more symmetrical and compact, though it grows 3½ to 5 feet high. They grow best in a somewhat moist situation, but we have a number of plants doing well in dry borders. *Sidalcea candida* and *malvaeflora* are both desirable border plants blooming now, the first with white and the other with rosy pink mallow-like flowers, arranged along a slender and twiggy stem. They grow to a height of from 2 to 3 feet and are very ornamental either in the border or at the edge of small shrubberies.

Verbena venosa is not quite hardy with us and requires slight protection. It is a continuous bloomer and produces its rosy purple flower heads in profusion until late in autumn. A sunny situation is best for it and the plant is well worth growing even if we have to protect it in winter. *Pardanthus sinensis* has been in flower for some time past. The stems grow to a height of 2½ to 3 feet and bear a succession of orange yellow flowers splashed and dotted with purplish brown. It is a good plant in most any situation, does well in shade or sun, but prefers moist ground. In the fall the seed-pods are very ornamental when they are opening and expose to view the glossy seeds.

Silene Schaftæ is a low compact growing free flowering plant, covering the ground effectually. Its pretty flowers are produced continually from now until fall, but with us it will flower best and longest in partial shade, though formerly

I have grown it successfully in full sun on Long Island. *Statice latifolia* is an old plant, very hardy and sure to flower every season. When once planted it may remain for years without disturbance and will send up stronger flower stems and more of them every season. The sprays are useful in a dried state as well as freshly cut. *Malva moschata* and the variety *alba* are both capital border plants. The great mass of flowers they produce from every joint of the many stems is surprising, coming out for weeks in uninterrupted succession. A sunny place and deep soil is best for its welfare.

Montbretias are not herbaceous plants but are perfectly hardy and have flowered for some weeks, blooming until September or even later. They should be introduced freely among the earlier flowering plants. They will come up annually stronger and thicker and produce many branchy spikes, set with their handsome and brilliantly colored flowers. Scarlet, crimson, yellow, in various shades and in combinations are represented among them. The foliage is gladiolus-like but much smaller and the plant, when in flower, has a more graceful appearance. *Lychnis chalcidonica alba* lasts longer in perfection than the ordinary scarlet. It does not grow so tall as the older kinds and usually sends up more flower stems. *L. vespertina plena*, another white-flowering species, with a loose and spready habit, is in bloom continuously until late in fall. It is still a rare plant and not offered anywhere in quantity, owing to difficulties experienced in propagation.

Salvia tarinacea is a very free flowering border plant, with a tomentose white calyx and light violet-blue corolla, a very pleasing color combination. The flower spikes are long and many flowered and the plant has a clean and neat habit, forming a branchy bush 2 to 3 feet high. A most desirable subject for the border; requires sunlight and rather rich soil to do its best. *Inula macrocephala*, a bold looking plant 3½ to 4 feet high with large golden yellow flowers and large entire oblong leaves, taller and more robust in growth than *I. glandulosa*, blooms until September and is a fine subject for the lawn or for the back part of a wide border. *Clematis Davidiana* with its axillary clusters of blue hyacinth-like flowers is fully out. It is seen to best advantage when planted as an isolated specimen in the lawn, where it forms a rounded bush about three feet high and blooms for a long time.

Erythraea diffusa, is a neat little tufted plant with bright rose-colored flowers, which are produced in great profusion during summer. It grows only about 3 inches high, should have light sandy soil and will succeed equally well near the front of the border or in a rockery where not shaded too much. *Cimicifuga racemosa* is sending up its long slender spikes of white flowers. The spiræa-like foliage is perfect in spite of the great heat it had to endure early in July. *Campanula rotundifolia* and *C. carpathica* in variety, continue to flower very freely, so does *Dicentra eximia*, and *D. formosa* *Trollius europæus*, and *T. asiaticus* are now sending up a second crop of flower stems and appear now as if they would bloom until frost.

Rudbeckia maxima is now only beginning to open its first flowers while other species have been fully out for more than a month. *Erodium manescavi* is pretty and attractive with its purplish red clusters of flowers, which last so long in perfection. The foliage is divided into nar-

row and deeply cut segments and is very ornamental. *Erodiums* belong to the geranium family and should have light soil and a sunny position either in the border or on a rockery, but with us they require a slight protection in severe winters.

Bupthalmum salicifolium has many branchy slender stems clothed with narrow small willow-like leaves. The flowers are brilliant yellow and of good size; a very neat plant about 2 feet high, requires a rather dry and sunny position but succeeds tolerably well in any ordinary garden soil. *Chrysosoma linoxyris*, "Golden Locks," are covered with yellow flowers, a pretty plant which should be grown more generally, it requires but little care and is entirely hardy. *Draccephalums* are still in fine condition; blue is a desirable color in the borders and the habit is all we can desire in a dense growing ground or rock-covering plant.

Rochester, N. Y.

J. B. KELLER.

LILIUM HENRYI.

This new lily, lately introduced from the mountains of China, is in flower with us for the first time and a welcome addition it is to this class of bulbous plants. It seems to be one of the hardiest and strongest of growers and is sure to be largely grown when better known. It begins to grow early in spring and care has to be taken that late frosts in spring do not harm the stems, as they seem to be very tender in their early stage of growth, in fact ours were cut by the frost we had in the early part of May, but we were able to save one and we are now rewarded with a stem carrying 17 flowers.

With us this lily has grown a little over four feet high, but it is said to grow six when well established. The foliage is large and dark green, not unlike *longiflorum*. The flowers are of good size, the color yellow lightly spotted with a band of green around each petal. It resembles *L. speciosum* somewhat, in fact it is catalogued by some firms as the yellow *speciosum*.

DAVID FRASER.

BOCCONIA CORDATA.

I note in your August 1st number, what Mr. Egan says of the *Bocconia cordata* as being perfectly hardy. Until my experience with it last winter I supposed it so, but here it was killed down about a foot. Not a particle of the plant that was not under a foot of soil or protected by some covering equal to this, was alive this spring. But below this foot of soil were left pieces of the root which were alive, and though it is not so strong and will not attain its usual height this season, it is in bloom from these lower portions of root. In one or two other places on my grounds, however, where the *bocconia* had gotten in from scattered seed, though the plants were not so old, the roots not having penetrated so deep, it was entirely killed and has not started at all this season. This was of course an exceptional winter for I have had it for years before this and none of it was affected by the cold.

F. H. HORSFORD.

Charlotte, Vt.

The Cold-Frame.

PLANTS IN GOLD FRAMES.

There are numerous letters and articles in GARDENING on the subject of cold-

frames, but they are not explicit enough for amateurs as to their management. My frame is about two feet below and one foot above the ground, faces the south, has protection on the north and is well drained.

I desire to know how to treat the following plants: 1. Seedling penstemons; some growing in the open ground and some in pots. 2. Seedling *Lobelia Victoria*, growing like No. 1. 3. Wall flowers, two years old. 4. Tritomas. 5. *Oxalis floribunda rosea*. 6. *Delphinium nudicaule*; seedlings, some of which have commenced to bloom, others very small. 7. *Myosotis*. 8. *Epimediums*. 9. *Calampelis*.

According to a foreign catalogue "the roots of *Lobelia Victoria* should be taken up like dahlias," but I hesitate to treat seedlings in that way. I kept a few last winter in a cold graper by simply potting and covering them, and they did fairly well. *Calampelis* bids fair to be an excellent and useful vine. It has already grown this summer from seed at least twelve feet, and numerous strong lateral branches. The foliage is delicate and pretty and the flowers resemble in color and form those of the *Delphinium nudicaule*; according to Henderson it should be protected in a cold-frame.

I propose to bed all the plants named in the frame in about six or eight inches of sand and I desire to know: 1. Whether they should be first cut down and to what extent. 2. Whether they should be covered, say with peat moss, and to what depth. 3. Whether they should be so bedded before or after they have been touched with frost. 4. Whether they should have extra protection in very severe weather. 5. To what extent they should be exposed to the sun. 6. Whether they should be allowed to grow in the frame in early spring or kept back as much as possible until planted out.

I have plenty of peat moss and can protect plants in the open ground to almost any extent. Perhaps in the case of some of the plants you would advise me to do so.

My gardener recently cut down my pæonias to within a foot of the ground. I fear that this will prevent the formation of crowns and that I shall have no bloom next year. Am I right? R. M. W.

Toronto.

Concerning cold-frames and their management we may say that the frame he has now will answer for wintering his hardy or half-hardy plants, though there is no necessity of having it so deep; 15 to 18 inches from the glass is ample depth for this purpose. Plants in very deep frames are more liable to rot than those in shallower structures. Such things as *Lobelia Victoria*, *Delphinium nudicaule*, *myosotis* and *epimediums* would very likely prove perfectly hardy in his latitude, though a slight covering may be applied in November or the beginning of December. Earlier covering should not be practiced in herbaceous borders. Wait until the ground is frozen an inch deep or so and the winter has set in for good; never cover very thickly; loose, long material is better than compact and short stuff; we should protect rather against the rays of the sun and the drying winds, especially during February and March.

With tritomas it is different. Their roots are tender and will suffer seriously in frozen ground. A cellar or a root house is a safe place for them; here they may be placed thickly together in boxes, their roots covered and embedded in soil



A CLUSTER OF BRIDESMAID ROSES.

or sand, but they may also be wintered in the frame if dry leaves or other material is piled over them soon after severe weather has set in; banking up the exposed sides and ends of the frame with long strawy manure will greatly assist in keeping out frost; the glass also must be covered with mats and boards.

The pentstemon seedlings I suppose to be of the half-hardy varieties. They will be safe under the shelter of the frame. The wall flowers also, but both require to be aired in favorable weather to prevent decay of foliage and stems.

Calampelis, or rather *Eccremocarpus*, are generally considered greenhouse plants, but *Eccremocarpus scaber*, the hardiest among them, may be wintered in a well protected frame. *Oxalis floribunda*, or what is the same, *O. rosea*, may be dried off in autumn for a few days, the tubers placed in a box of soil or sand and stored away in any dry cellar until the 1st of April, when they may be planted out in a frame where pansies or violets have been growing to start them into growth. Wintering them in a cold-frame would usually result in the loss of a good many tubers.

As a rule all herbaceous plants should be cut down to within a few inches of the ground before taking them up in late fall after the frost has destroyed their beauty. The covering of ordinary stock, protected by glass, is a dangerous practice in most cases; it is safer to give additional protection over the glass in very severe weather. On mild days always raise the sash and allow plenty of fresh air but no sun, for dormant plants should be kept so until planting time. When the weather grows milder toward spring the plants are apt to start into growth, and we should prevent this by removing the

sash, in daytime only at first, and later on leaving them off altogether, night and day. Some plants, for instance the wall flowers, may require a shading for a few days until they are hardened off and get accustomed to the stronger light.

All the plants mentioned should be planted out in their permanent quarters as early as possible in spring; we must not wait until they begin to grow in the frame.

About myosotis for bedding out I may say here that they can be treated just like pansies. You can plant them in autumn where you want them to bloom if the plants are of suitable size, or you may grow them in cold-frames until spring. In the first instance a few evergreen boughs afford protection enough and here they are not liable to draw and get lanky, as they usually do more or less under the sash.

The construction as well as the management of cold-frames differs with the various purposes they may be intended for. A frame for wintering dormant half-hardy plants is differently treated than a primula, pansy or violet frame. In protecting the plants from severe cold we must not forget that moisture is nearly constantly arising from the unfrozen ground below and that prolonged dampness is detrimental to all plants, therefore whenever the weather is favorable a free circulation of air through or over the plants is of great benefit.

I do not know why your gardener should cut down the pæonias to within a foot of the ground at this time of the year. If the plants are strong old clumps next year's flowers will probably be smaller than usual, but if they are young plants this treatment will not seriously interfere with their flowering, but all de-

pends on the quantity of foliage remaining on the plants; if enough of this was left on then you will have a good crop of bloom. Pæonias will stand a great deal of hardship without serious injury. K.

Miscellaneous.

A CLUSTER OF BRIDESMAID ROSES.

I send a photograph of a bunch of roses which pleased me so that I felt I must share its beauty with the readers of GARDENING. The roses used were the pink Bridesmaid, and they were tied with ribbon of a lighter shade than the flowers. In the tie were five or six violet-shaded pansies.

G. E. R.

GLOXINIAS.

[See page 359.]

In regard to culture Mr. Hogan writes: "I plant the dry bulbs in a mixture of dry sphagnum moss, chopped fine and mixed with sand, so that when the bulbs make roots they can be lifted out of the moss without breaking the roots. As soon as a good start is made and two or three leaves show they are potted in light soil composed of one part good potting soil and one part leafmold and sand mixed together. We are very careful about the watering. When the bulbs are in the moss they are given plenty of water, being careful to sprinkle any dry spots on the moss. They are kept in a temperature of 65° to 70° at night with 10° to 15° more in the day time. We consider it essential not to wet the leaves, and we give shade as soon as the sun gets so hot there is danger of burning."

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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A JUBILEE bouquet of orchids presented to Queen Victoria contained several thousand blooms, including the rarest varieties obtainable.

THE University of Missouri announces a summer course in scientific and practical horticulture, free to teachers in Missouri. Particulars may be had by addressing Professor M. L. Lipscomb, Columbia, Mo.

THE American Institute of New York City has issued a list of premiums to be awarded for plants, flowers, fruits, vegetables and cereals, to be competed for at Madison Square Garden, Sept. 20 to Nov. 4. Copies may be had on application to the general superintendent, Mr. Alfred Chasseaud, 113 West 38th street, New York.

A LARGE QUANTITY of trees and shrubs for the Pittsburg parks has been ordered from the nursery firm of Ellwanger & Barry, Rochester, N. Y. Pittsburg is spending money freely and wisely on its parks. The planting at Schenley Park is being done under the personal supervision of Mr. William Falconer, the superintendent, who was formerly editor of GARDENING, and whose abilities are well known to the readers of this paper.

THE twenty-first annual meeting of the Georgia State Horticultural Society was held at Savannah Aug. 4 to 7.

A SUCCESSFUL exhibition of roses was held under the auspices of the Bedford Flower Club at Mount Kisco, N. Y., June 26.

THE disease of the Bermuda Easter lily (*Lilium Harrisii*) is being investigated by the authorities at Washington and a report will soon be issued.

THE LIFE of wooden greenhouse benches can be considerably lengthened by applying a coat of cement to the bottoms when the lumber is dry. Make it thin enough so it can be applied with a white wash brush, but no thinner.

THE Horticultural Society at Northampton, Mass., recently distributed a large number of chrysanthemum plants to school children. Printed directions for their care were also given and prizes will be awarded at the fall exhibition for the best specimens.

IT IS REPORTED from Berlin, Germany, that a destructive hail storm that raged for hours in southern Wurtemberg caused the death of thirteen persons and did more than \$4,000,000 damage to crops. The stones were of enormous size and thousands of head of cattle were killed.

WE HAVE RECEIVED a copy of the first annual report of the Carnegie Library of Pittsburg. It shows that on February 1 last the library contained 26,859 volumes and over 3,000 pamphlets. During the past fourteen months there have been 132,232 visitors to the reading room and 138,591 volumes have been drawn for home use.

STRAWBERRIES is the subject of Bulletin No. 77 of the Central Experimental Farm, Department of Agriculture, Ottawa, Canada. It contains many practical cultural directions and is freely illustrated. Our Canadian readers would find this bulletin very useful, and they can no doubt secure a copy on application to the director, Mr. Wm. Saunders, Ottawa.

LYE is the best agent for removing putty or paint from greenhouse glass. Dissolve a pound can of lye in twenty gallons of water. If the glass is allowed to remain in the solution for an hour or so the putty or paint can be more readily removed. Care should be exercised in preparing and using the solution as the lye attacks the hands as readily as the putty.

IN THE Boston Parks *Rosa Wichuraiana* is largely used in covering the ground between shrubs, and *R. lucida* is employed in masses as a ground cover. To Prof. Sargent is given the credit of suggesting the idea of so using it, in order to lessen the expense of maintaining the grass. North of Chicago the woods are full of the dwarf rose *R. humilis*, which could be used for similar purposes, as it stands drouth well and its foliage colors brilliantly in the fall.

BULLETIN No. 65 of the Agricultural Experiment Station, Purdue University, Lafayette, Ind., tells of the successful use of formalin for the prevention of potato scab. The treatment advised is: "Add 8 oz. formalin to 15 gal. water, and soak the seed tubers in it for two hours, then cut and plant." It is found that formalin, a non-poisonous, non-corrosive substance, is equal to corrosive sublimate in efficiency

and is without its dangerous and troublesome properties.

The Fruit Garden.

TART CHERRIES.

Very many of those who set out sour cherries rely altogether on the common pie or Morello. This is an excellent sort, but there are others which could be added to it were more than one tree wanted. I would certainly take the one mentioned were but a single tree wanted. It is the first to ripen of all its class.

Those who know of it, and who want a late one, usually plant the English Morello, and without a doubt it is a splendid sort. The fruit is large, it is late, and it will hang a good while after it is ripe, without spoiling. It is very tart, and this no doubt has much to do with its good keeping qualities. When quite ripe, the fruit is almost black, and of beautiful appearance.

But in starting these notes I had particularly in mind the Duke cherries, a class between the sweet and the sour ones. There are several of these which I have known planted as tart ones, though the fruit is as good fresh from the tree as when preserved. The Royal Duke and Late Duke are two particularly good ones, the last named especially. This is the one usually planted with the common pie cherry, and is what most customers mean when they order a late pie cherry from their nurserymen, as it ripens much later than the others.

It may be as well to say a word about planting cherries. While early spring is a good time, I believe early fall is a better. Spring is apt to catch one busy, and if a cherry be not planted early it won't do well. Planted in early fall, a tree rarely dies. Plant it towards the close of September. Strip the leaves off, ram the soil in firmly about it, soak it well with water, and it will live. If where the soil freezes deeply in winter, mulch it to keep the frost out. It is a great help to a freshly planted tree.

Philadelphia. JOSEPH MEEHAN.

RASPBERRIES AND BLACKBERRIES.

Every amateur should have a small bed of raspberries and blackberries for family use, even if he does not care to grow them for market. The situation selected for these fruits should not be too damp a one, neither should it be too rich, or the canes may make a late growth, which will not ripen well, hence are easily hurt by winter freezings. Raspberries may be set three to four feet apart each way, blackberries need to be six to eight feet.

These fruits do very well planted in the fall, and the work may be done at any time after the close of September. If in spring, do it just as early as possible. At whatever time it be, cut the canes back to about six inches of the ground, and see that the soil is trodden in quite firmly about the plants.

In Pennsylvania we have no trouble at all with blackberries in winter, and none with the ordinary raspberries. But there are tender sorts of raspberries, seedlings from the European species, which are much the better for a covering at that time. In fact I believe it pays to cover all raspberries, so many fine beds have I seen of plants which were covered in winter. But an inch or two of earth is sufficient to cover with, if the plants be held

in place with stout pegs, otherwise a thicker covering is wanted, to weight the canes down.

As to sorts, our growers mostly place Cuthbert first, it being a good one in every way. The old Philadelphia is good, so is Reliance. Marlboro is very good. Hansell is unproductive with us, and Turner spends too much of its strength in the making of numerous canes. These are all red ones. For a yellow one the Caroline is very much grown.

In the way of blackcaps Gregg and Souhegan are still much grown here, but farther north and west the Nemeha, Ohio and Palmer are preferred, especially the first named.

The Lawton and Wilson's Early and Kittatinny blackberries are favorite sorts here, answering all demands, but, as with raspberries, hardier sorts are demanded for colder states. To supply this call, such sorts as Ancient Briton, Wachuset, Dorchester, Snyder and Hilborn are in request. It is, however, noticeable that most all localities have their favorites. Very often what is good and hardy in one place is not so in another not far away.

These differences are often the results of soil or of dissimilar methods of cultivation. Anything that tends to keep up a late growth is opposed to the power to resist cold. Considering this, besides selecting a proper situation as advised above, the cultivation of the ground about the plants should cease early in the fall, not to encourage late growths. It is this which explains much that otherwise would seem unaccountable in the varying behaviour of fruits in localities quite near to each other.

Philadelphia. JOSEPH MEEHAN.

Miscellaneous.

A FLORAL STORY.

The numerous and varied common names applied to the denizens of the floral kingdom have given rise to several ingenious arrangements of these into essential parts of so-called stories. Sometimes a skeleton story is written out, leaving blank spaces where these common names may fit in and supply, as it were, the missing links of the story. These skeleton stories are given to the several members of a social gathering, and a certain time allowed during which each endeavors to fill in these blanks.

In England, where the common names are more familiar than here and where flowers are more universally grown, it is not a very hard task to complete a story in a short time. We print one as an example. Every word in italics is the name of some tree, shrub, flower or grass.

Youth-and-Old-Age wandered forth one day at *Four o'clock a. m.* The *Sun Rose* above the *Mountain Fringe* heralding the full *Morning Glory* of the *Fare-Well* summer *Thyme*. *Old Age* was a *Quercus*. He had on a *Leather Jacket* and a *Skull-cap* with a *Purple Fringe*. An old-fashioned *Stock* encircled his neck, while his legs, which were about *All-bone*, were enclosed in a pair of *Dutchman's Breeches*, and on his feet were a pair of *Moccasins*. In one hand he carried a *Cane* and strapped across his *Leather Jacket* was a *Poor Man's Weather Glass*, and I am sorry to add a *Brandy Bottle* was hidden in his pocket. Of course of the two *Old Age* was the *Elder*.

Youth had all the spirit of a *Wild Irishman*, the *Brawn* of a *Wild Savage*, tree from *Care*, and *Bent* on having a good *Thyme*. His days were always *Fair Days*, he was very *Poplar* and the *Fair Maids of France* thought *None so pretty*; but *Common Honesty* compels me to record that *Thyme* and *Thyme* again he would *Go-to-bed-at-noon*. But after all he was *Anise* fellow and full of *Spunk*. He wore a suit of *Pink Crape*, and on his head was a *Huntsman's Cap*, while his *Brighteyes* were shaded by a *Chinese Parasol*. 'Twas early. They tried to *Tread Softly* so as not to *Wake Robin*. Suddenly *Youth* exclaimed, "*Poppy!* What thoughts are *Currant* in your mind? I *Fancy* your 'ootsteps *Flag*. We are *Cumin* to a *Virgin's Bower* and can rest. Won't that news *Gladden* your heart?"

"*Yam* somewhat tired," answered *Old Age*, "*Lettuce* rest. I will *Cast-me-down* upon this *Lady's Cushion*." "All right *Myrrh* dear fellow," exclaimed *Youth*. "Do it *Quick*, but look out for that *Nettle*, that *Radish* looking one. A rest will do you *Much-good* and it will *Tickle-my-fancy* to lie down also. Now if you will stretch out and *Lilac* a sleeping babe it will do you good." "Young man," said *Old Age*, "stop your *Everlasting* prattle. Keep your mouth closed or you will get your *Mugwet* in this dew." "*Haw! Haw!*" laughed the youth, "you can not *Cast-me-down* with such advice. I call that *Gall*. That's sharper than a *Serpent's tongue*. Say *Poppy*, there goes an *Indian*, one of the *Crow-bells*. I'm going to make love to her." "*Beesom* what careful of the *Red-legs* rash youth. Don't tread on her *Indian Corn* or there may be trouble. I owe the *Races* a

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grudge. One more *Indian Shot*, so as to make another *Indian turnip* his toes to the *Daisies* causes but few *Indian-mourners*." "*Holy Hoke!* old man; you are getting crazy; do you suppose there is no *Indian-heart*."

"*Begonia* foolish fellow," replied *Old Age*. "dost thou see *Onion* hill that *Maid-of-the-Meadow Plantain Lilies*. You *Live-in-idleness* and are at *Logger-heads* with *Industry*. Your *Maudlin* tongue will do you *Little-good*. Have a care Are you *Ware* that she desires to *Mate*. You should *Over-look* her *Modesty* and *Rush* towards her; you will never *Rue* it. She is a *Spring Beauty* and has a *Mint* of money. She is inclined to *Matrimony* and you may *Marigold*. Any *Dog-wood* like to do that. Drive *Careaway* and *Gladden* her heart. Declare your *Boy's-love*, meet her at the *Garden Gate* and exclaim *Jump-up-and-kiss me*. You're *Arum* yellow if you don't."

"Can't do it *Poppy*; she would think me a *Medlar*. Let her *Pine* away. No maiden's heart can ever *Brake*. Let her join the *Nuns*. Your talk is *Bombast*. I could never *Stick-tight* to her. My love *Wood-Waxen* cold. Such a *Yoke-Wood* not be *Paradise*. I would rather *Poke* along as I am."

Just then a succession of *Earth-quakes* swallowed up *Youth* and *Old Age* and finished the story.

THE NEW YORK GARDENERS' SOCIETY.

A special meeting of the New York gardeners' Society was held in their rooms on Saturday, July 24, for the purpose of distributing the prizes won at their exhibition in the city hall in June. The president, Mr. John Shore, in handing the winners the several valuable cups and money prizes, accompanied them with suitable remarks which were responded to by the recipients.

A discussion followed on the advisability of holding a canna show next month, and it was finally resolved that an exhibition of cannas and other flowers be given in connection with the society's first annual dinner which will be held on the second Saturday in September, and to which the presidents of all neighboring Florists' and Gardeners' Clubs will be invited. It was also decided to hold a chrysanthemum show in November, and a committee was appointed to make arrangements accordingly.

On the exhibition table were some very fine seedling cannas raised by Mr. A. L. Marshall, of Pawling, N. Y., one of which, a large deep crimson flower named John B. Dutcher, which is an improvement on Chas. Henderson, was awarded the society's certificate. Messrs. John M. Hunter and A. Welsing also made displays of new and standard varieties of cannas. The latter showed a vase of asters which were much admired. A certificate of merit was awarded Mr. Ferdinand Mangold for a new cypripedium.

The next meeting of the society will be held on the occasion of the dinner, September 11th, which will be a great event amongst the gardeners of this section.

JAS. I. DONLAN.

PEAT MOSS.

In the interest of all lovers of horticulture I would like some of your distinguished correspondents to make a few experiments with peat moss and give your readers the result. Last year I covered my cold grapevines with it and they came out as clean and fresh in the spring as if out of a bath, and they are now loaded with large clusters of fruit,

[CONTINUED PAGE 366.]

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MR. J. T. TEMPLE, of Davenport, Ia., of this committee, says: "I consider BURBANK one of the best of this year's novelties."

MR. FRED KANST, head gardener of South Park, Chicago, and an expert judge of Cannas at the World's Fair, says: "The flowers were much admired in the park this summer. The foliage is like rubber; it is always good; you can't tear it."

MR. JAMES DEAN, Chairman of that Committee, and chief of New York's horticultural display at the World's Fair, says: "Burbank is a new giant flowered forerunner of a new class of these beautiful flowers."

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which I attribute to the vines having passed such a comfortable winter. I have since mulched with this moss nearly everything I have in my grounds, including vines, shrubs, fruit trees, roses and bedded plants. I find that not only is the soil kept moist with less watering, but the plants are not injured by the radiation of light and heat.

Amongst other things I planted a very large bed of tuberous begonias and under each plant I put a double handful of moss. The result is that I have the most vigorous and beautiful display of begonias that I ever saw. I also potted a few in a mixture half sand and half moss and the result has been equally satisfactory.

I see that "Jadoo fibre" is highly recommended by a Philadelphia florist. This fibre is peat moss, subjected it is said to special treatment. I am inclined to think, however, that the peat moss alone will be found upon experiment to possess many, if not all, the extraordinary qualities which are claimed for Jadoo; but however this may be there is nothing equal to it for many horticultural purposes. Amongst other things it is said to have antiseptic properties which are hostile to insect life of all kinds.

Toronto, Ont.

AMATEUR.

MASSACHUSETTS HORTICULTURAL SOCIETY.

Number III of the transactions of the Massachusetts Horticultural Society for the year 1895 has been received. It is a list of the accessions to the library of the society during the year. The list enumerates 650 volumes, giving number of pages, size and thickness of book and name of donor. A communication from the President, Francis H. Appleton, accompanying same is as follows:

The Massachusetts Horticultural Society was incorporated in 1823, "for the purpose of encouraging and improving the science and practice of horticulture." The chief means by which this end has been sought are horticultural exhibitions, the library, and lectures and discussions on subjects connected with horticulture. Among these the library stands prominently as a source of scientific and practical information on horticulture, yet it is felt that the actual usefulness of the library is less than its possibilities, and the object of this circular is to increase its usefulness. It may not be generally known, even to the members of the society, that the library appears to have attained an extent and value exceeding that of any other horticultural library in this country, and excelled by few in the world. The accompanying list of accessions to the library during the year 1895 will give some idea of the rapidity with which it is growing, which is greater than ever before.

Though only members of the society can take out books for home use, all who desire are cordially invited and welcomed to consult its books in the library room, and all such will find a great convenience in its central location—at Horticultural Hall, No. 101 Tremont street, Boston.

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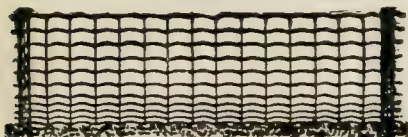
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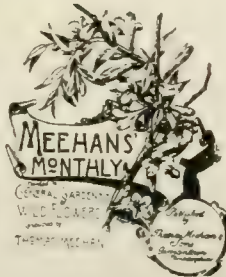
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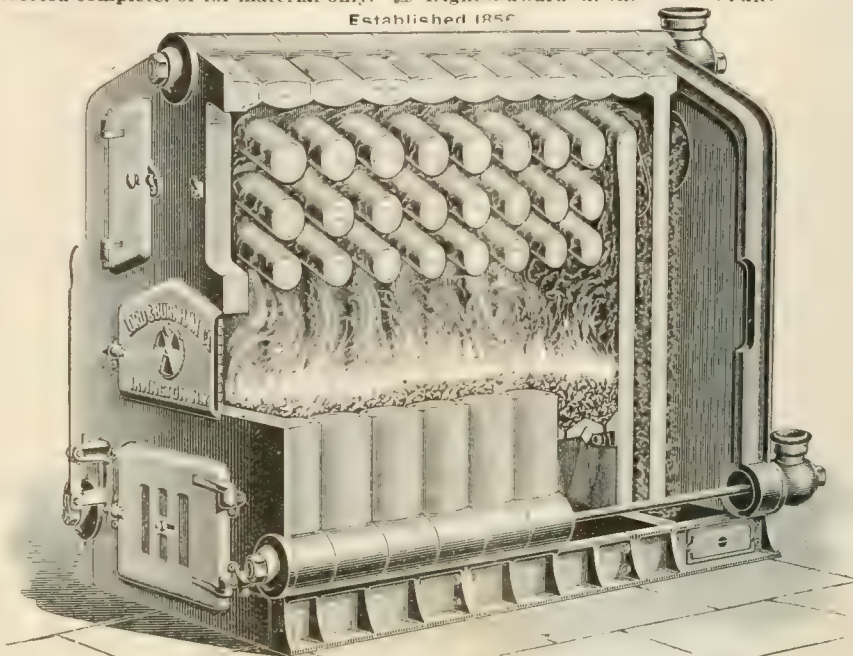
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A SEEDLING RHODODENDRON PLANT 14 FEET IN DIAMETER AT MR. H. H. HUNNEWELL'S

Trees and Shrubs.

RHODODENDRONS ON THE ESTATE OF MR. H. H. HUNNEWELL, WELLESLEY, MASS.

The beautiful grounds of Mr. Hunnewell at Wellesley have been visited by many of the readers of GARDENING, and the fame of the place, its proprietor and his talented gardener, Mr. F. L. Harris, extends beyond the sea. Mr. Hunnewell has undoubtedly done more than any other person to popularize the rhododendron in America. None has studied the rhododendron so thoroughly, none loves it more. For many years all the promising novelties have been imported and tested, watched and cherished under his

eye as though they were his children. At the annual rhododendron exhibition in Boston upwards of one hundred dollars in premiums are awarded each year from the income of a fund which Mr. Hunnewell has given for the encouragement of rhododendron and hardy azalea culture.

The greatest disappointment to the rhododendron fancier has resulted from the introduction of varieties not sufficiently hardy to withstand the extremes of our climate, tempting in the beauty and delicacy of their color, but with an insufficient proportion of the hardy *Catawbiense* blood in their constitution, or, as is frequently the case, grafted on the *ponticum* stock, which is all right for England, but valueless here for exposed planting. The buyer should beware of misleading lists of so-called hardy sorts.

In another column we give a list of varieties which Mr. Harris recommends as thoroughly hardy and suitable for general planting in the latitude of Boston. Among them are quite a number of fine, clear shades, and they comprise a sufficient variety and range of color to satisfy any reasonable demand.

Mr. Harris emphasizes depth of soil as one of the most essential requirements of the rhododendron. The bed should be not less than two and one-half feet in depth. The soil at Wellesley is a light sandy loam, and this with a mixture of swamp muck seems to suit them exactly. Another important point is to see that the plants do not suffer from dry weather in fall. If not provided with an abundance of moisture branches will die, buds will go abortive and the vigor of the

plant will be seriously impaired. If properly cared for in this respect the rhododendron will endure a good many more degrees of frost than if weakened from lack of nourishment. One secret of Mr. Harris' success with rhododendrons and hardy azaleas lies in the fact that all flower heads are pinched off as soon as the blooms have fallen, so that no seeds are allowed to form, half a dozen men being employed at once upon this work.

Of all the attractions at this beautiful place none surpass the rhododendrons, which bring thousands of visitors during the flowering season. The display this year is pronounced by Mr. Harris to have been the finest on record, the season having been especially favorable for them. No description can convey an idea of the beautiful spectacle so well as the photo-

graph in the center. New canvas is required about once in two years.

LIST OF RHODODENDRONS RECOMMENDED
AS PERFECTLY HARDY BY MR. F. L.

HARRIS, WELLESLEY, MASS.

Album elegans	Kettledrum
Album grandiflorum	King of Purples
Alex. Dancer	Lady Armstrong
Atrosanguineum	Lady Grey Edgerton
Chas Bagley	Maximum Wellesia-
Chas. Dickens	num
Caractacus	Mrs. John Clutton
C. S. Sargent	Mrs. R. S. Holford
Delicatissima	Old Port
Edward S Rand	Purpureum grandi-
Everestiana	florum
F. D. Godman	Ralph Sanders
Francis Dickson	Roseum elegans
Guido	Sir Wm. Armstrong
H. W. Sargent	Rosabelle

C. Deodara and *C. Libani*. There is a lovely blue colored one of *atlantica*, called *glauca*, and this is the one most common in cultivation. When it reaches a height of about 6 feet and over it rivals in appearance the famed Colorado blue spruce, *Picea pungens*. Its appearance on a green lawn is beautiful. This species is a native of Mt. Atlas, Algeria, and answering for Pennsylvania, it is entirely hardy.

The Cedar of Lebanon is also quite hardy. There are what might be called full grown trees of it about Philadelphia were it not for the knowledge of the monsters to be seen in England. But the trees here are large enough to produce cones, as they have been for many years, and some of them are perhaps 50 feet in height.



RHODODENDRONS AT MR. H. H. HUNNEWELL'S, WELLESLEY, MASS.

graphs which we present in this issue. Many of the plants are thirty years old, and specimens twelve to fourteen feet through are not infrequent. The beautiful specimen plant shown in one of the photographs is one of many fine seedlings raised by Mr. Harris, but never named.

The tender varieties are stored in pits during cold weather. As soon as the season opens they are taken outdoors and planted where during the flowering season they are to be protected by a tent. Those varieties that are tardy in blooming are kept a week or two later in a pit with a glass roof so as to advance them and bring the full display on at one time. If the plants show lack of sufficient moisture when removed from the pit the roots are thoroughly saturated with water before planting. This is done by dipping them in a large tank, a laborious job with the big plants and their heavy clumps of roots. The tent is spread over them when they begin to open the flowers, and is removed as soon as they fade, the plants being left as they stand till November 1, when they are returned to the cellars. The tent shown in the photograph covers about half an acre and is thirty feet high

The kalmias are in bloom with the later rhododendrons and make a grand show. Mr. Harris attributes the many failures in kalmia planting, as in evergreen planting, to the lack of dense fibrous roots in much of the stock purchased, and which can only be secured by frequent transplanting in the nursery rows while the plants are young. Imported plants are apt to give greater satisfaction for this reason, transplanting being systematically followed up in the European nurseries. The border of variegated *Funkia japonica* makes a pretty edging for the kalmias. It requires less care than grass, and being a rapid grower soon makes a dense close growth to the exclusion of all weeds.

THREE BEAUTIFUL CEDARS.

In former numbers of GARDENING favorable mention is made of the Mt. Atlas cedar, and certainly it deserves the greatest praise as a lovely, hardy evergreen. In this vicinity there are three species, all of which are hardy. They are the Mt. Atlas, the Deodar, and the Lebanon, known respectively as *Cedrus atlantica*,

The Mt. Atlas one resembles this a great deal in its habit of growth, but is always readily distinguished by its foliage, the Lebanon being of dark green while the Mt. Atlas is of a silvery blue.

The deodara is perhaps hardly as hardy as the others. In winters when deep snows prevail I have seen it lose its foliage above the snow line, but not the wood, new leaves forming where the others had been as soon as growth started in spring. To see the deodar and the Mt. Atlas growing near each other, viewed from a distance, one would think the deodar possessed the bluer foliage of the two, but it does not, though it is of a silvery color. The impression is caused by the greater amount of foliage possessed by the deodar as it makes a far bushier growth than the other, and thus it seems to be the best. As the Mt. Atlas gets larger and more branches are made, it is easily seen to be the better.

To succeed with these trees, plant them on some elevated place, rather than in a hollow. To winter them successfully they are wanted to make a short, sturdy growth which will ripen well. This usually follows the planting in high, well



RHODODENDRONS AT MR. H. H. HUNNEWELL'S, WELLESLEY, MASS.

drained places. In fact, aside from this object, these cedars prefer a dryish situation to any other. The shelter of large trees in winter is a help to them.

Philadelphia. JOSEPH MEEHAN.

TRUMPET VINES.

(*Tecomas*.)

At this season of the year when trumpet vines add so much to the beauty of our gardens, a few words in regard to them will not be amiss. About this city there are three sorts flowering now, our native *radicans*, one called *Thunbergii* and the Chinese species, *grandiflora*. All are flowering at the same time, and their bright colored flowers are a great attraction.

In regard to the color of the flowers, *radicans*, which in general is called scarlet, is hardly of deep enough color for

all the species are, it is a common vine about many dwellings, one friend digging up a sucker from the root and giving it to another. There seems some uncertainty about the origin of the crimson one, *Thunbergii*. A Philadelphia nurseryman received the original plant from Germany. It is of the *radicans* type, has the same thick calyx and long tube. The deeper red flowers, and corolla rather more reflexed at the mouth, are the principal differences.

All three of these tecomas are among the showiest flowers of summer. Planted as vines they usually grow on without flowering until they reach the top of what they are planted to. Then the direction is turned towards flowering.

I have in previous notes spoken of the beautiful ornaments these vines make when planted as shrubs. With a stake

Wade sends, and which were found preying upon hickory trees at Oakmont, Pa., belong to the species known as the hickory bark-borer, *Scolytus 4-spinosus*. Ordinarily this species attacks only dead or unhealthy trees, and it is possible, in the present case, that the trees were dying from some other cause before the beetles appeared.

"The parent beetles issue from the bark toward the end of June and in the early part of July and again enter a tree through the bark for food and for the purpose of egg laying. By preference they select a tree that is dying or that has just been killed. A large vertical chamber is constructed within the bark next to the wood, and along the sides of this the female deposits her eggs. The whitish larvæ or grubs, hatching from these eggs, excavate side galleries at right angles to



RHODODENDRONS AT MR. H. H. HUNNEWELL'S, WELLESLEY, MASS

that. Red is a better description. *Thunbergii* is catalogued as crimson, but a truer description would be purplish red. *Grandiflora* I should describe as orange red, or yellowish orange. All published descriptions of this that I have seen fail to give the color exactly as it should be, far from it, in fact. Wood's botany, for instance, says "flowers of a rich scarlet," and Nicholson's Dictionary "scarlet," which it certainly is not. But when both works say of it that the flowers are shorter and broader than *radicans*, the description is quite correct. There is practically no tube to the flowers, such as exists in both of the others, and the mouth of the flowers is as much as four inches in diameter, while two inches would represent the others. It is the large flowers, lacking a tube, almost, and the more of yellow and less of scarlet that so readily distinguishes it from the others.

In the vicinity of Philadelphia this species is much esteemed, and as it is readily increased from pieces of root, as

to hold them in position for a year or two, until they become stiff enough to hold themselves up, nice branchy heads are formed, true shrubs or miniature trees, and these make a brilliant appearance during July and August, flowering continuously from six to eight weeks.

Philadelphia. JOSEPH MEEHAN.

THE HICKORY BARK BORER.

Mr. W. Wade, Oakmont, Pa., sent us specimens of a borer and wrote "This insect, new to me, has attacked my hickory trees, eating into the next year's bud and cutting off the leaf-stalk, my trees being half defoliated. Can you suggest a remedy?" The specimens were forwarded to the Government Entomologist at Washington and the following reply was received:

"I have your letter of August 9, with enclosure from Mr. W. Wade. In the absence of Dr. Howard I have to report that the specimens of insects which Mr.

the brood chamber. Oviposition takes place usually during August and September, and the transformations are effected within a year. Two or more species of parasites and a number of natural enemies are useful in reducing the numbers of this insect and prevent serious injury except under exceptional circumstances.

"For remedies you are referred to the general instructions given in Circular No. 24 of this Division, a marked copy of which is enclosed herewith.

F. H. CRITTENDEN,
Acting Entomologist.

We add below extracts from the circular referred to.

After the borers once obtain possession of a tree it is next to impossible to save it. Some few species of trees are able to withstand borer attacks for years, while others succumb, unless remedies are applied, in a year or two after the attack begins.

Our chief reliance is in preventives, in the employment of mechanical precautionary measures that will serve the double purpose of effectually deterring wood and bark-boring insects from boring into or depositing their eggs on the trees and from effecting their egress through the bark once



TENDER RHODODENDRONS UNDER TENT AT MR. H. H. HUNNEWELL'S.

they have begun their attack, and in other mechanical measures.

The most important requisite is clean culture; in fact, little of substantial value can be accomplished remedially without it. Owners of forest land who have sufficient financial interests at stake will do well to cut down the dead and to trim the injured trees. For the protection of chestnuts all dead oak as well as chestnut trees, and such as are infested and too feeble to recuperate should be cleared away and burned. Much can be accomplished by simply removing the bark of the dead timber.

A frequent and potent source of injury is in the almost universal custom of permitting cut or sawed timber to season without removing the bark, a custom followed alike by the forest landholder, the general farmer, and the mill owner. Even the family woodpile may become a center of infestation. Wood that is cut during winter becomes infested the following spring and early summer, and when left to season through the summer and autumn months should be consumed or otherwise disposed of before the following April. A few cords of wood may develop enough boring insects in a single season to infest and injure acres of woodland. Another source of infestation is in carelessness in permitting dead trees to come in contact with living trees and in bruising or otherwise injuring healthy growth.

The progeny of insects that deposit their eggs in one season so loosen the bark that it may easily be removed and burned before the following spring, thus destroying millions of the insects before they have an opportunity to issue and lay their eggs for the destruction of valuable trees.

A wash of lime, to which a small quantity of Paris green or other arsenical mixture and a sufficient amount of glue to make it adhesive have been added, is a valuable deterrent, as are also a wash consisting of soft soap reduced to the consistency of thick paint by the addition of a solution of washing soda in water, and a thick wash of soap, plaster of Paris, and Paris green. These washes are best colored like the bark of the tree and this may be accomplished by the addition of a little lamp or bone black. Fish oil is also a valuable deterrent.

Whatever is used should be applied for most species just before the first warm spell of spring. At the very outset of an attack a very thin application of kerosene, kerosene emulsion, or creosote by lightly brushing or spraying it over the

infested parts, would kill the beetles with which it came in contact. Protective measures against the two-lined chestnut borer should begin about the first of May in the latitude of the District of Columbia and a little later in more northern and colder localities.

BEAUTIFUL SUMAGHS.

The rhus or sumach family constitute a beautiful group of small trees and shrubs. Nearly all of those in cultivation in this country are natives here, the chief exception being *semialata*, formerly called *Osbeckii*, a native of Japan. Of the native ones cultivated the following comprise the list: *Glabra*, *glabra laciniata*, *typhina*, *copallina*, *aromatica* and *cotinoides*. There are two others not cultivated, *radicans* and *renenata*, their poisonous properties banishing them from gardens.

Osbeckii is the name under which *semialata* is found in most all catalogues. It becomes a fair sized tree, and during a month or so following the close of July it makes a grand display of flowers, which are the more valued because of the lack of flowering trees and shrubs at that season. The flowers are whitish in large panicles. If this desirable sort, like the most of our natives, changed its foliage to a brilliant scarlet in autumn, it would be called for faster than it could be produced, but, unfortunately, this desirable quality cannot be added to its other ones.

Of the native ones mentioned *glabra*, *glabra laciniata* and *typhina* are valued for their ornamental heads of fruit as well as for their foliage in the fall. And *copallina* may be added, though it is not of such conspicuous beauty in the way of fruit. The greenish flowers of the others

are in dense heads, not unlike a large, thick pine cone. The berries which succeed the flowers are of crimson color when ripe, which is in early summer. These red "cones" on the ends of branches clothed with beautiful green pinnate leaves, are most attractive. These cones retain their color and their position on the branches after the foliage has fallen. In late autumn the leaves themselves become crimson, adding greatly to the charm of autumn scenery wherever they are growing.

Copallina is not as beautiful in fruit, while having a great deal of attraction. But it makes up for it in its large heads of yellowish white flowers which are in perfection in midsummer, and for its lovely shining foliage, pretty at all times in its season. It forms a low, spreading bush of much beauty.

Aromatica, a species sometimes called *suaveolens* is of a quite spreading nature and if disturbed about the roots throws up a lot of young shoots from them, quickly forming a little thicket. Its low, almost prostrate growth, fits it nicely for planting where a mass is required. Unlike the others named, its fruit is in small scattered clusters. These ripen early, being of a bright red color, as early in the season as late June, and because of this, so few shrubs showing fruit at such an early date, it is much valued. This, like all the rest mentioned is noted for its beautiful crimson autumnal foliage.

Cotinoides is a southern species, very much like the mist bush, *Rhus cotinus*, but of much larger growth and prettier appearance. In its native wilds it is said

to attain a height of 40 to 50 feet, but it has not been disseminated a great deal until recently, so that there are no large ones of it in cultivation in the north. But from its habit and rapid growth it certainly promises to become of much more tree-like size than *cotinus*.

Radicans and *venenata* are the two poisonous ones, and it is a pity they are, for their foliage is of a brilliant scarlet in the fall. *Radicans* is the well known poison-vine and *venenata*, the sumach of tree-like growth found in swamps. All parts of these two are poisonous to those who take poison, to which class the writer belongs.

Philadelphia.

JOSEPH MEEHAN.

long time on the plant. It grows about five feet high and is well worth a place in any collection. *R. Newmanii* is one mass of yellow flowers. This is one of the best of the whole group, blooming so freely and lasting nearly all summer no garden should be without it.

Pardanthus japonicus is now blooming freely. The flowers are very pretty and are borne on long slender stems. The plant itself looks very much like an iris, is easily raised from seed and blooms the second year.

Tritoma Uvaria grandiflora is a grand sight when grown in a big clump. The flowers are very conspicuous and can be seen at a considerable distance. The

foliage plant with towering spikes of purple flowers. They are the better for the protection of a frame in winter as the leaves get badly burned, which greatly detracts from the beauty of the plant.

Clematis flammula is now in flower everywhere around the garden, and growing as it does over dead trees and natural growth, the effect is very fine. It is a fine climber for this sort of work and the long branches of white flowers are much used in cut flower work. The companion to it, *C. paniculata*, is not yet in flower.

Many varieties of the golden rod help to keep the garden gay, and for growing in shady and out-of-the-way places nothing could be better. The same can be said



RHODODENDRONS AT MR. H. H. HUNNEWELL'S, WELLESLEY, MASS.

The Flower Garden.

PLANTS IN BLOOM AUGUST 14.

Among perennial plants in bloom at this date, the late blooming phloxes are the most conspicuous. They last for some time in flower and being so varied in color commend themselves to all. They grow freely in any garden soil and need very little attention except dividing when they get too large. *Veronica spicata* is a splendid plant for the perennial border, its tall spikes of bright blue flowers are very showy and last for weeks. They are good for cutting and we use many for this purpose.

Sedum spectabile is one of the best late blooming border plants we have, the foliage is quite effective at all times, but when the immense flat heads of rose colored flowers appear, the plant is all that could be desired.

Helianthus multiflorus fl. pl. the double sun-flower, when grown in a mass makes a good show and is very effective in the garden or planted among the shrubbery. It lasts for some time in bloom, but for cutting purposes the flowers are rather stiff.

Rudbeckia purpurea makes a fine border plant. The flowers are large and last a

flowers are borne in heads on tall spikes, orange-scarlet and yellow, and last a long time in perfection. Tritomas are not reliably hardy and should have protection in winter. We take ours up and winter them in a cool greenhouse, setting them under the benches and covering the roots with sand.

Pyrethrum uliginosum is now beginning to flower and will last till frost comes. It is a fine border plant and coming as it does so late, when border plants are scarce makes it still more valuable. It forms a stout bush and bears a profusion of the choicest white flowers which are very useful for cutting.

Malva moschata alba forms a low branched bush about two feet high. It has been in flower for some time and is good form. The flowers are pure white and are desirable for cutting purposes.

Verbena venosa, although it has been in flower since early in the season, is still making a good show. It is not hardy with us, but if cuttings are put in now and wintered in a cold frame they will come out nicely in spring.

Centaurea ruthenica has large yellow flowers and finely cut foliage. It does not seem to be very hardy with us, but a stock is easily obtained from seed and it blooms the second year.

Acanthus latifolius is a handsome

of the fall asters; a few of them are also in flower.

Anemone japonica and its variety *alba* are beginning to show their flowers but it will be a week or two before they make much of a display.

The perennial hybrids of the lobelia are showy, free flowering and of many colors. They are not quite hardy but if sown in February they will bloom the first year and are well worth the trouble given them.

Campanula pyramidalis is now in fine shape. Its towering spikes of blue and white bell shaped flowers are very beautiful, making it the most conspicuous bell-flower in the whole class. It is easily raised from seed and is quite hardy, though we always winter a few in the frame in order to have big strong plants, and they are well worth the trouble.

The perennial larkspurs are now giving a good second crop of flowers. These were cut back when the first flowers faded, and by doing this it helps one greatly in the fall when cut flowers are in demand.

Viola cornuta, both blue and white, is now in a mass of flowers. What a free flowering little plant this is! It began to bloom early in May and has continued ever since. We have put in a lot of cuttings and every one has rooted. We will now pot them off and about September



RHODODENDRONS AT MR. H. H. HUNNEWELL'S, WELLESLEY, MASS.

15, plant them in the garden. It is also easily raised from seed.

Coreopsis lanceolata and *grandiflora* are still in good form and promise to last for some time to come. They are very useful for cutting, in fact are the best yellow flowers we have for the purpose, as they are liked better than the sun flowers.

Platycodons both tall and dwarf sorts are giving a wealth of their blue and white bell-shaped flowers. The double form is also in flower, but we do not like it so well as the single ones. Marguerite carnations in many colors keep us well supplied with cut flowers and nothing could be better for the purpose. If some of the best of them are lifted and potted up next month they will bloom nearly all winter.

Salvia splendens is a fine plant for a bold effect. Masses of it planted here and there in the garden help to brighten it up greatly in the fall months when color in the garden is scarce.

Linum perenne gave us a mass of flowers in the early part of the season, and when it was past we headed it in somewhat; it has broken away nicely and is now a sheet of blue.

Among bulbous plants a mass of double and single tiger lilies are very fine; although a common lily still it is one of the showiest.

L. Wallacei is also in good flower. It is an easily grown lily and increases very rapidly. *L. Leichtlinii*, both yellow and red, is now at its best. The *speciosums* are not yet in flower except those in pots. Quite a few *auratums* are still in flower, and *Henryi* is also lasting well.

Zephyranthes candida, *Z. rosea* and *Cooperia Drummondii* are quite nice, but these little bulbous plants are not hardy and have to be taken up every fall.

The montbretias are now very fine and how nice these slender spikes are for cutting! The annuals now make the most conspicuous display in the garden. Although many are past a late planting will last until frost makes us a visit.

Mahwah, N. J.

DAVID FRASER.

HERBACEOUS PLANT NOTES.

In the latter part of summer and in autumn yellow flowers are very abundant among the herbaceous plants. *Coreopsis*, *anthesis*, *achilleas*, *actinomeris*, *trollius*, *senecios*, *arnicas*, *rudbeckias*, *œnotheras*, *hypericums*, *heliopsis*, *inulas*, *heleniums*, *chrysocomas* and others are in bloom then and the borders are amply supplied with all shades of that color, still I must say a few words in favor of another yellow flower, which deserves to be grown more largely than it is at present. The several species and varieties of *helianthus* are greatly neglected, though in some commercial places we may find occasionally one or two kinds growing in rows along with other hardy plants, which are useful as cut flowers. For this latter purpose they are especially well adapted; the flowers possess unrivaled lasting qualities, can always be cut with long stems, and are very easily managed in any kind of soil in the field or in the garden. As a border plant or in isolated clumps in the lawn they are equally desirable or they can be used effectively in the shrubbery. All the *helianthus* have bright yellow flowers of medium to rather large size, their general habit is bold and erect and most of them grow from 3 to 5 feet high. *H. Buttaris* is one of the lowest growing, being but little over 3 feet high; it is a small flowered species and blooms from the latter part of July until September.

H. decapetalus multiflorus, fl. pl. is one

of the best known varieties, with medium sized, very double flowers and narrow ray florets. It begins to bloom in August and continues in good shape throughout September; its height is about 5 feet.

H. rigidus (diffusus), sometimes called *Harpalum rigidum*, is one of the very best single flowers, with broad and substantial rays one and one half inch long and a small disk, is in bloom during August and September and attains a height of 3 or 4 feet.

H. soleil d'or belongs to the multiflorus section, but has much broader rays than the ordinary double variety. It is also dwarfier in habit, hardly ever growing over 4 feet high and blooms at the same time as the other.

H. orgyalis is the tallest among them, never less than 6 feet, in very rich and moist soil often 10 feet. The tall stems are clothed thickly with very narrow, long and recurving foliage. From the upper part of the stems a number of slender branches are sent out, terminating in so many flowerheads, the whole forming a large and well shaped panicle of medium sized flowers. The plant has a very graceful appearance in all stages of growth and is an ornament in any position, but when exposed to strong wind each stem should have the support of a strong wire stake as soon as it attains a height of about 4 feet, else the first storm may break them down; planted among shrubs or when surrounded by other strong growing plants no such support is required.

H. lætiflorus is very much like *H. rigidus*, but some of its flowers come semi-double.

A few more may be mentioned here, but they are perhaps inferior in some respects to the above. *H. atrorubens*, is distin-

guished from the others merely by a red-rish brown disk; *H. doronicoides* is a small flowered species, *H. hirsutus* is a low growing form, much resembling *H. divaricatus* only it has a more hairy stem, and *H. strumosus* is downy on the under side of the foliage.

The flowers of any and all of these are very showy and remain in perfection for a long time, intermixed with tall growing asters, the autumn flowering aconitums or the boltonias. The hardy sun-flowers cannot fail to give satisfaction either in groups, in borders or among the taller spring and summer flowering shrubs. However they should not be allowed to spread out too much, else they would soon monopolize the ground entirely. The roots travel under ground several feet in a year, forming new crowns at their ends and these must be thinned out every spring. If for some reason this is not practicable, transplanting every second year will probably do as well.

Rochester, N. Y. J. B. KELLER.

GARDEN LILIES.

The lily is one of the most important genus of flowering bulbs known to cultivation. There are hundreds of species which are found in nearly every part of the world, but Japan furnishes most of the finest sorts. Many of the lilies are of the easiest possible culture, while others need a little nursing until they get well established. Many of the lilies remain dormant for a year after planting, and more especially if they are planted in spring. Even many of our choice *auratum*s, that were planted last fall, have not appeared as yet, but on looking at the bulbs the other day we found them to be in good shape and no doubt they will start next spring all right. The same can be said of *speciosum melpomene* and some of the *longiflorum*s, as they too have remained dormant. The following list of lilies, with date of flowering, are among the best varieties we grow. There is a large list to choose from but some are so tender, and others hard to flower that the amateur who wants a display of flowers should cultivate the more hardy sorts, which as a rule grow and flower well.

The first of our lilies to flower was *L. tenuifolium* (the coral lily of Siberia) which is one of the small flowered species but a perfect gem, the flowers drooping, eight to fifteen in number and intense scarlet in color. It grows two feet high and came into flower May 30. It is of graceful habit and is easily grown.

L. parvum came into flower June 3. It grows about two feet high and bears two to six flowers, orange yellow, finely dotted. In habit of growth and flower this variety looks very much like our common *canadense* much improved.

L. umbellatum first flowered June 8. This is closely allied to the variety *elegans* and is of easy culture and sure to bloom. There are many varieties of this lily and all are good. It grows two to three feet high, bears four to six flowers which are bright red with black spots; a good lily for the amateur.

L. monadelphum came into flower June 12. This is a most beautiful lily, growing about four feet high with eight to twelve flowers, the color seems to vary in the flowers as no two of ours were alike, some being dark yellow, others light yellow, while some were nicely spotted. All are good and should find a place in every collection of lilies.

L. Hansonii came into flower June 18. This is said to be a very scarce lily and we cannot see why as it grows so freely

and increases so rapidly that a stock is soon obtained. It grows three feet high bears flowers in loose racemes, six to ten in number, color orange dotted with brown. The petals of this lily are very thick and heavy, and have the appearance of wax; it is a beautiful lily and is of easy growth.

L. pardalinum opened its first flowers June 19. It grows about four feet high, and has four to eight flowers, red spotted with black. This is a very showy lily and one that is easily grown.

L. elegans Alice Wilson came into flower June 20. This is a dwarf form of *elegans*, growing only about eight inches high and bearing very large flowers for the size of the plant, which gives it an odd appearance. The color is yellow and the flower is erect in habit. We have other varieties of this lily, all being good and of easy culture.

L. candidum first flowered June 24. Though this is a common lily, yet it is a beauty when seen at its best. But this year we have condemned it, and intend to clear our garden of it as the disease is so bad with us we are afraid that it might spread to the other lilies. We have tried to grow it in many ways, and intend to give it another chance, but we will plant it at a distance from the garden and grow it in clean sand with no manure and see how it will behave.

L. concolor is another one of these small flowering sorts, the stem being about a foot high. It is of slender growth, but a lovely lily if grown in a mass. The flower is crimson with small dots. It came into bloom June 25.

L. excelsum flowered June 25, and is in every way a beautiful lily. It grows three to four feet high and bears six to twelve flowers which are of a drooping habit and rich buff in color. With us this variety is sometimes troubled with the lily disease, but by spraying it can be kept clean. It is of easy growth and does well in any soil.

L. Brownii is one of the large flowered sorts and does well with us increasing rapidly. It grows two to three feet high and bears one to four flowers six inches in length, pure white inside, outside chocolate brown. It is a lily that all should have as its large trumpet flowers are very conspicuous in the garden.

L. croceum also came into flower June 25, this is a robust and hardy lily, doing well in any situation and grows three to five feet high. The flowers are ten to fifteen in number, orange crimson dotted with black. There is not much difference between this variety and some of the *umbellatum*s with the exception that it grows a little taller.

L. Martagon Dalmaticum Catini opened its first flowers July 2. This is a handsome and free growing lily attaining a height of six feet; flowers rich velvety purple, ten to twenty in number, and is considered the best variety of the Turk's cap class.

L. auratum came into flower July 5. The many forms of this lily do not all bloom at once as we have still quite a number to flower at this writing (August 14). Everyone is familiar with the *auratum*s and we will only speak of the choice varieties. *L. a. Wittei* is one of the pure white forms. The flowers are not so large as the type, the petals being shorter, but it is in every way a beautiful lily. It came into flower July 18. *L. a. pictum* does not differ much from the type, the flowers being nicely spotted and the petals tipped crimson. *L. a. rubro vittatum* we consider the most beautiful flower of all the *auratum* group. The flowers are

large, well expanded, pure white, with broad crimson bands up the center of each petal. It seems to be a strong grower, even more so than the type, and should find a place in every garden.

L. superbum came into flower July 25. Although a common lily it is still one of the showiest we have in the garden. With us it grows about ten feet high and produces an astonishing number of flowers, which are bright orange red with dark spots. *L. tigrinum*, both double and single, came into flower the same day as *superbum*. Grown in a mass the effect is very pleasing. It will thrive in most any soil and grows about four feet high, flowers drooping, orange red with black spots; a good lily for rough places. *L. Henryi* is a new lily but cannot have too much praise as it is a striking and lovely flower. It grows about four feet high, flowers orange yellow, ten to twenty in number. It first flowered July 30.

L. Leichtlinii came into flower August 2. This is a rather slender growing lily but a very beautiful one. It grows about four feet high and has yellow flowers with black spots. The red form came into flower the same day as the type but it is not so good as the yellow form. *L. Wallacei* grows one to three feet high, flowers orange yellow spotted black. It is a free growing lily of easy culture and increases very fast. It came into flower August 2.

These are only a few of the lilies we have, many others, both common and rare, find a place in our garden as they are one of the plants we love. We also grow a number in pots but they are now past for the season, and so successful have we been with them that we will grow a large number in this way another year. In planting lilies in the garden, the ground should be well prepared for them. Plant about six inches deep, covering the bulbs with clean sand. This keeps them from rotting and they seem to start nicely in the sand. Lilies as a rule like a little shade, that is their roots shaded from the sun's rays. We grow our lilies in beds and borders where other plants are bedded out for the summer and with but few exceptions they flower with us splendidly and increase from year to year.

DAVID FRASER.

Mahwah, N. J.

SOME WORTHY SHRUB-LIKE HERBACEOUS PLANTS.

There are a few herbaceous plants so shrub-like in their character that many nurserymen catalogue them as shrubs, as purchasers use them in their collections just as they would true shrubs.

One of the best known of these is now the well distributed *Desmodium penduliflorum*. I use the name under which it is generally known, though it is a true lespedeza. Lespedezas are one seeded, while the desmodium legumes are many seeded, a character which readily enables one to determine the genus. Just which species this is, is not agreed on, some calling it *Sieboldi*, others *bicolor*. Curiously, there is in cultivation a true shrub called *Lespedeza bicolor* by nurserymen. It is unfortunate that so many desirable Japanese plants have been introduced under improper names, as a name once learned as belonging to a plant is hard to detach from it. This is a slight digression from the subject on which I commenced, but I will return to it now.

The following are a few of the shrub-like perennials, which add to the value of collections at this season of the year: *Desmodium penduliflorum*, *Aralia race-*



LAURELS ON THE ESTATE OF MR. H. H. HUNNEWELL, WELLESLEY, MASS.

mosa, *Aralia cachemirica*, *Cassia Marylandica*, *Polygonum cuspidatum*, *Clerodendron Bungei*.

The arching branches of the desmodium, full of its rose-colored flowers, is one of the prettiest sights of the season. The individual flowers are not lasting, but there are so many of them that the display is kept up for from four to six weeks. When the plant is strong, say after it has had three or four season's growth, it makes shoots of from four to six feet in length, and when full of its flowers its beauty may be imagined.

There is a white flowered one in cultivation, known as *Desmodium japonicum*. While desirable, I would prefer the rose colored one.

Aralia racemosa is our native "spike-nard." As with the common *aralia* of our lawns, it has pinnate foliage and bears greenish white flowers. These are in branching racemes, and when in full flower, as they were last week, the "bushes" are far from looking uninviting. And then, in a short time the green berries will turn to a reddish black, at which stage it presents quite an ornamental character.

Aralia cachemirica is not yet met with outside of botanical collections. It may be said to be an improved *racemosa*. Though coming from the Himalayas it bears a close resemblance to *racemosa*, but it is larger every way. The plant makes a more vigorous growth and the racemes of flowers partake of this vigor.

The strongest stalk on a bush which I measured today was eight feet in length. Three feet of this was clothed with its

flowers. It is not news to say that many Himalayan and Japanese trees and plants very closely resemble our own, as is the case with this plant.

Cassia marylandica is "Wild senna" met with in its wild state here and there, but never in great quantities. It is a good "shrub" at this season, as it is four to five feet in height and well clothed with deep yellow flowers. The flowers display singular looking dark brown, almost black stamens. It is a very handsome plant.

Polygonum cuspidatum is a desirable plant when there is no objection to its suckering. It is a great plant to spread, small plants springing up from its roots in all directions, soon forming a large clump from a single plant. It should not be planted on a lawn, but if some half-wild place wants an addition of a pretty foliated plant, set this polygonum there. In midsummer it bears clusters of small white flowers, which are very pretty.

Clerodendron Bungei—authorities make of it now-a-days—is really a shrub, but in this vicinity the branches are always winter killed. These might be preserved by covering them with soil, but as there are shoots from the ground which flower profusely in August, the preservation of the branches is not thought necessary. The pink flowers are in large clusters on the ends of the branches.

Philadelphia.

JOSEPH MEEHAN.

CLIMBERS FOR EASTERN AND WESTERN EXPOSURE.

Please enlighten me in regard to clim-

bers that would give the best satisfaction in this city, eastern and western exposure. Milwaukee. H. C. K.

There are quite a number of climbers suitable for your climate. You do not state whether they are to be used on a wall or trellis. For a stone or brick wall *Ampelopsis tricuspidata*, known also as *A. Veitchii*, or the Boston ivy, is the best, as it clings closely and is hardy after the first few years. For two winters at least protect it up to a height of say six feet. After then it stands our climate. This vine does not cling very well to painted wood, unless the surface is well sanded.

Where a trellis is used the following vines will do well. *Akebia quinata*, *Actinidia (polygama) arguta*, *Aristolochia sipho* (Dutchman's pipe), *Clematis paniculata*, *C. flammula*, *C. virginiana*, *C. Viticella*, *C. graveolens*, *C. Viorna* var. *coccinea* and *C. Jackmanni*, obtaining home grown plants of the latter.

Either exposure will do, although the eastern is the better one on account of the hot afternoon sun. Give good soil and if planted closely to a cellar wall, puddle some stiff clay between the wall and the hole in which you plant. W. C. EGAN.

WE HAVE RECEIVED a copy of the last report of the Ontario Fruit Growers' Association and the Ontario Fruit Experiment Stations from Secretary L. Woolverton, Grimsby, Ont. This report will be of special value to the fruit growers of Ontario, guiding them as to most desirable varieties for planting, etc.

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THE Waco Floral Society, Waco, Texas, will hold its second annual chrysanthemum show November 10, 11 and 12 next. A printed list of the prizes has been issued and copies may be had by applying to the secretary, Mrs. M. B. Davis, Waco, Texas.

THE Trans-Mississippi and International Exposition, to be held at Omaha, Neb., June 1 to October 31, next year, will have a special building devoted to horticulture and the horticultural display promises to be excellent.

IN ANOTHER COLUMN will be found an interesting communication on the dwarf Juneberry from the pen of that veteran horticulturist, Benjamin G. Smith, Cambridge, Mass. Mr. Smith is now 81 years of age. In a personal letter he writes: "Though somewhat of a veteran I have not lost my love for gardening, nor for your excellent journal. Although it is some twenty years since I introduced the Juneberry into Massachusetts, with us it has not failed a crop since its first year of fruiting."

THE third annual excursion of florists and gardeners to the Dreer nurseries at Riverton, N. J., took place August 31. The day was devoted to an inspection of the extensive greenhouses, water lily gardens, canna beds, trial grounds, etc., and a luncheon was provided for the visitors by Mr. Dreer. The business of Henry A. Dreer was established in 1838 in Philadelphia where the seed store is still maintained. The greenhouse establishment at Riverton is one of the largest in the country and the nurseries and trial grounds are always of great interest to visitors.

AT THE thirteenth annual convention of the Society of American Florists held in Providence, Rhode Island, August 17 to 20 a large number of interesting essays were read the majority being of purely professional interest. The report showed a present membership of 786 and a balance of \$1021.19 in the treasury. Steps were taken looking to the formation of a mutual company to insure greenhouses against fire. In an essay on "A year's progress in roses" Mr. M. H. Walsh spoke highly of the following: *Souv. du Pres. Carnot*, *Maman Cochet*, *Madame Abele Chatenay*, *Caroline Testout* and *Kaiserin Augusta Victoria*, of foreign origin, and Mrs. Robert Garrett, *Souvenir de Wootton Marion Dingee*, *Lillian Nordica*, *Jubilee* and the several seedlings of *Wichuraiana*, of American origin. He also spoke favorably of Mrs. R. G. Sharman Crawford, *Clio*, *Helen Keller* and *Clara Watson*. He rejoiced over the progress made by American hybridizers and predicted a greater interest in roses here on account of the new American varieties. In the discussion of this paper the polyantha rose *Mosella* was considered of exceptional merit. It had been found perfectly hardy at Philadelphia, and never produced a congested bud and was in this respect superior to *Souperet*. Prof. Byron D. Halsted read a very interesting paper on "Root galls of cultivated plants" pointing out the distinction between those galls due to a low form of mold, such as the club root of the cabbage, those on clover and clover-like plants which are produced by bacterial germs and promote life instead of inducing decay, and those produced by microscopic worms (called eel-worms) that thriving in the tissue of the abnormally swollen roots check the activity of the plant and ultimately may cause it to sicken and die. In regard to the latter he said: "For the eradication of these microscopic eel-worms there are certain precautionary measures that may well be borne in mind, namely the examination of the roots of plants and the rejection of all that are galled; the cleansing of the soil in all its constituents by freezing, baking or steaming; the use of lime water while the crop is growing and possibly that of Kainit or some other commercial fertilizer, bearing in mind always that sick plants are unprofitable and good management means wealthfulness from the start and always."

A feature of the convention was a lecture by Prof. Geo. L. Goodale, of the Botanical Garden of Harvard University, on "Our favorite exotic plants in their homes." Prof. Goodale illustrated with very beautiful stereopticon views the subject of tropical vegetation, describing with much detail the palms, orchids and other exotic plants which are the pride of our best greenhouses. The lecture was given without any technical language and passed in brief review the characters of the genera and species which have become general favorites under cultivation. He showed that the term exotic is only relative, that our common wild plants would be exotic if grown under other skies, and, further, that a good many of our wild flowers are quite as well worth cultivating and improving as some which have become established here. The fashions in plants by which certain species are for a while great favorites and then give way to others were shown by the lecturer to be based on other factors than the whims of capricious people. The gigantic bamboo and climbers of Ceylon and enormous ferns of Australia were exhibited by means of photographs on the large screen. Perhaps the phase of plant life presented

by the kinship between the plants of the north and of the equatorial zone, touched upon by Prof. Goodale, gave as many surprises to his audience as any part of his graphic demonstration. There was an extensive exhibition of plants, supplies, tools, greenhouse models and appliances in connection and it was thoroughly representative of the great progress made in commercial floriculture. The plants included beautifully grown palms, crotons, rare conifers, rare decorative plants, and there were two fine displays of aquatic flowers. The collection of aquatic shown by H. A. Dreer, Philadelphia, included a beautiful double lotus (*Nelumbium*) and several magnificent new water lilies (*Nymphaea*). Omaha, Neb., was selected as the place for the 1898 convention and officers for the ensuing year were elected as follows: Wm. F. Gude, Washington, D. C., president; A. Donaghue, Omaha, Neb., vice-president; W. J. Stewart, Boston, secretary; H. B. Beatty, Oil City, Pa., treasurer. The delegates were most hospitably entertained by the florists and gardeners of Providence and at the conclusion of the convention were taken by steamer to Newport where the gardeners of that beautiful city acted as hosts. The entire party was given a ride over the magnificent ten mile drive and by special invitation of the owners inspected many of the beautiful estates with which Newport abounds. They were also treated to a shore dinner under a huge tent on the beach.

The Fruit Garden.

THE DWARF JUNE BERRY.

An article in GARDENING by Joseph Meehan on "The Dwarf Juneberry," I have read with interest and will briefly relate my experience with it.

I was attracted and somewhat fascinated by an account of the "June Berry" published many years ago in a western journal, by Dr. Hall, Davenport, Iowa. I immediately wrote him and inquired if he was cultivating it as an amateur or commercially. He replied after testing it he was satisfied it was a very desirable small fruit and he was growing commercially. I ordered two dozen plants. When received I concluded I was sold just the amount of my expenditure (six dollars, plants and expressage). Nevertheless I gave them personal attention. The third year they fruited and they proved a complete success.

I exhibited them at the Mass. Horticultural Society. They attracted a good deal of attention and the fruit committee awarded me the society's silver medal for its introduction to Massachusetts. As there are many *Amelanchiers*, and I was in some doubt about where to place it, I went with a branch of the plant to Cambridge Botanical Garden, and the professors pronounced it *Amelanchier canadensis*, variety *oblongifolia*.

Cambridge, Mass. BENJ. G. SMITH.

SMALL FRUITS.

After fruiting, the roots of plants should be nursed back into vigorous life, by cutting out all old and surplus growth, cultivate thoroughly and give a good dressing of fine manure or wood ashes. This best prepares them for resisting the cold winters of the north, and stimulates them for active work in the early springs of the south.

It is sometimes desirable to propagate your own plants. If so, select strong new growth of currants and grapes, as soon as the leaves fall, cut in pieces about eight inches long, each piece containing three buds. Set in long straight rows, eight or ten inches apart, leaving top bud near the surface of the ground. Cultivate and keep free from weeds. Good one year plants are thus made the following season.

For black raspberries, bury the tips of the cane as soon as it naturally bends to the ground, leave until spring, when it is ready to detach and transplant.

Plants from the blackberry and red raspberry are usually taken from the sprouts or suckers that come up between the rows or around the hill, considerable care being necessary in digging the plants.

Root cuttings make best plants. Select strong roots in spring or fall, cut in pieces about five inches long and sow in drills about three feet apart.

The gooseberry being more difficult to propagate, should be mounded up, covering the hill except the tips of the branches. The following year many fine roots are found along the branches, these branches are removed, made into cuttings and set out the same as currants.

M. A. THAYER.

Miscellaneous.

APHIDES ON CHERRY TREE.

I have a small double flowering cherry tree called Buehler's, I think, or some such name, planted a year ago last spring. It has not grown much, but this spring had several blossoms. Through the sum-

mer it became infested with small ants and soon the leaves had the appearance of the one I enclose. I am anxious to save it. Can you tell me the cause of the blight? Are the ants destructive for they cover nearly everything that I grow. My tuberose buds are black with them, cosmos and rose bushes also. A friend told me if I would drive a small nail in my little cherry tree it might save it. Is there anything in that?

Evanston, Ill.

V. M. H.

The tree is undoubtedly infested with plant lice (*Aphides*), the presence of the ants indicating such to be the case. The latter are attracted by the presence of the lice whom they "milk." There are several remedies, such as spraying frequently with tobacco water, kerosene emulsion, coal tar fumes, etc. The presence of the aphides indicate a feeble condition of the tree. They seldom attack a tree in full health. It is best to keep the soil around the tree well cultivated and free from weeds, and mulch it with manure next fall. Next spring, or after the leaves drop this fall, cut in the head somewhat so as to induce a vigorous growth, and if successful in doing so, the chances are that next year the tree will be free from this pest.

W. C. EGAN.

TROUBLE WITH CYCAS REVOLUTA.

Last May I had sent me from the east a cypas with thirty leaves. It seemed in good condition, but the edges of some of the leaves have begun to turn brown and the plant has ceased growth. It has had an abundance of water and light. When received the pot had been broken in transit and I repotted the plant into a pot a little larger, using soil that had

been thoroughly burned. Did I do any mischief in adding more soil? I burn all my soil as it is filled with earth worms. I kept the air of the room at from 65° to 87° and avoided draughts. Can I hope to raise a crown of leaves successfully another year under the conditions above noted? Can you suggest any reason for the wayward conduct of my plant.

JULIA E.

It would seem from our correspondents' description that the cypas in question was not in the best condition for shipping so long a distance, it being in all probability a newly imported stem, and having but few roots. While in process of development the fronds of *Cycas revoluta* are extremely tender, and very susceptible to exposure and bruising, and it would be almost impossible to ship a plant in that fragile condition a distance of one thousand miles or more without injury.

The repotting would do no harm, though burnt earth is not the best compost for the purpose, and I would rather use some good loam with a slight mixture of sand, and also a sprinkling of bone dust as a fertilizer, leaving the soil in its natural condition, even though that included an occasional earth-worm.

The range of temperature mentioned, namely 65° to 87°, is much too high for the welfare of the plant in question, between 60° and 70° would be more suitable limits, as the cypas enjoys fresh air as much as a geranium.

Now as to the possibilities of the future: If the plant is firmly potted, that is, having the soil well rammed in the pot, the best course would be to keep it rather on the side of dryness for some time to come,

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and otherwise to leave it alone, for until some new roots have been formed there is little chance for further top-growth.

It is most likely that another crown of fronds will not appear before next spring, though the conduct of the cycas in this particular is frequently erratic, but the plant having had a severe check it would be a difficult matter to predict the date of its further growth, and considerable patience may be required on the part of its owner.

W. H. TAPLIN.

HOW TO EXTERMINATE DODDER.

How can I get rid of dodder that is very thick on *Monarda didyma* and *boltonias*? It seems to retard their full development. I have had them for several years and they are spreading every year more and more. Would burning the tops of the plants this fall, taking up the roots and washing them with a hose, carting away the soil where they were grown, and replacing with fresh soil remedy it?

J. M. M.

Chicago.

Dodder (*cuscuta*) are leafless, parasitic plants, their reddish, thread-like stalks twine around and spread over the stems and branches of herbs and low bushes, attaching themselves firmly on to the bark of the support with their numerous little protuberances or viscules, robbing the plants of their sap and in some instances stopping their growth entirely. In moist seasons they grow more vigorous and spread rapidly, while dry sunny weather and free circulation of air is adverse to their growth.

It is rather a difficult matter to completely destroy the *cuscuta* in low places unless we expose the ground to the full action of the sun for at least one season, therefore J. M. M. would do well to remove the *monardas* and *boltonias* now or this fall, as early as possible, burn all the plants and keep the infested space clear and bare of all growth for a year. If it is only a small space, however, his suggestion of removing and filling in with fresh soil would be all right, but under no circumstances should he plant the old stock, because it is very doubtful whether he can effectually wash out all the seeds which may be lodged in among the roots, and new stock can be procured most anywhere at very reasonable figures.

It is fortunate that dodder does not succeed very often in well cultivated ground else we would hear more frequently of its destructive influence on various plants, our climate in most sections being too dry for them. In our immediate vicinity we only find it in low moist places or in marshes. Several other species are indigenous to the north, west and south, some are stronger in growth than others but all are troublesome when they become abundant.

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There is a division containing but three sorts which are common and noticing two of them in flower to-day leads me to mention them here, hoping it may enable

[CONTINUED PAGE 382.]



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some of the readers of GARDENING to learn their names should they possess the sorts. I refer to the section in which the flowers are axillary, being clustered along the stem in small bunches, instead of being in a terminal panicle or corymb, as so many are. These three goldenrods are *caesia*, *latifolia* and *bicolor*. Strangely, too, the last named is a white goldenrod, the only one among the fifty sorts of any other than a yellow color. It is just coming into flower now. Its unbranched stem makes a growth of about two feet, the flowers starting at about one foot from the ground and clothing the plant to the top. Besides its rarity in color it is a decidedly pretty sort. It is usually found on the borders of woods, on dryish ground.

In quite dissimilar situation is found a showy sort, *latifolia*. Its home is in wet places, or decidedly damp ones. Its beautiful yellow flowers are clustered along the stem as in the case of *bicolor*, forming long wand-like shoots of yellow flowers. I remember well how in my early botanical days this species elated me when I first found it. It has large, broad, serrated leaves, like in my asters, and quite unlike ordinary goldenrods, and at first sight I thought I had discovered some new aster. Though a moisture loving plant it will do very well in a common garden situation. It, too, is in flower now.

The third one of this class is *caesia*, a truly elegant species, and one which flowers later than many others. I think it one of the best of all goldenrods. The stems are slender, but perfectly strong. They attain a length of about three feet, but the upper part of the stems curve over slightly. The color of the stems is ebony, the leaves are small and in every axil from a little distance above the ground, is a cluster of deep yellow flowers. It is delicate looking, yet hardy and beautiful, being to goldenrods what the maidenhair fern is to ferns.

There are one or two other species with axillary flowers, natives of the south, but only the three mentioned in the north, hence it is not difficult to name them.

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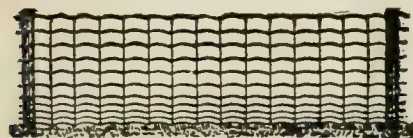
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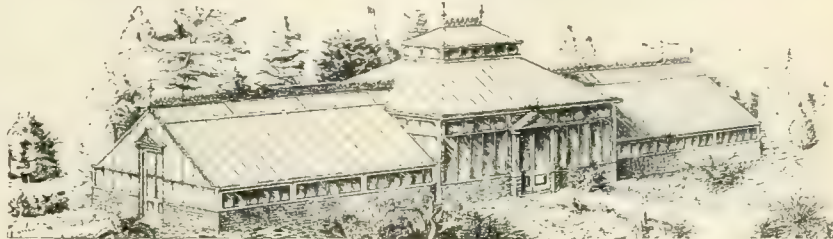
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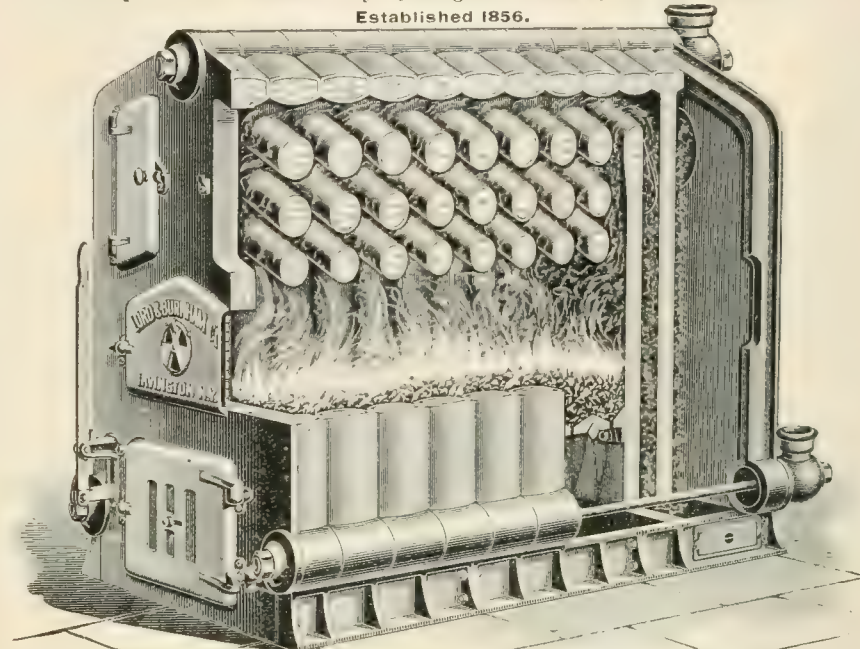
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THE COREAN PINE (*Pinus koraiensis*) AT DOSORIS.

Trees and Shrubs.

PINE TREES FOR THE GARDEN.

As we generally come upon pine trees cultivated in gardens or wild in the woods they are naked stemmed near the ground. Now this is proper in the forest where by reason of growing close together they have tall, straight trunks and unbranched except towards the top, which gives us clean timber with few knots. If left to themselves in the garden, and they have lots of room for the first ten or fifteen years of their life, they may be well branched from the ground up, but about this time the lower branches are apt to begin to die and the vigor of the trees runs up into the tops. And we have known over ambitious folk to actually

saw off the lower limbs from their pine and other evergreen trees—"trim them up"—so that they might see under them and let the grass grow. Ugh, what depravity! The beauty of a garden tree is in its fullness and perfection of form from the ground up.

Just look at this beautiful Korean pine (*Pinus koraiensis*) as it is growing at Dosoris; it is 20 feet 7 inches in height and 23 feet 2 inches in diameter of spread of branches on the ground, a garden model and void of any stiffness. Such a tree as this is would be the just pride of any garden. Then think of the sacrilegious wretch who would dare to chop off its lower limbs so that he could get a view away under it! The tree is perhaps 25 years old and in the fulness of health and vigor and without a visible sign of exhaustion. It has lots of room and the land is fairly

good; it was held down at the top during its earlier life to encourage a spread of lower branches and in later years neither top nor side branches were allowed to rush forth beyond the symmetrical proportions of the specimen as a whole, and still it was never pruned, a little timely pinching of the erratic young growths in May and June, a few minutes' work at most, once a year, was all the trimming it received.

For small gardens this Korean pine is one of the best to plant. But all things considered for quite small gardens the Swiss stone pine (*P. cembra*) takes precedence.

The Austrian pine is the best of our all-purpose pines, being the most available for shelter belts, but not long-lived; the Scotch pine is good for the same purpose, but in my practice not so good as the

Austrian. Our common white pine (*P. Strobus*) is the queen of all pines, and our red pine (*P. resinosa*) the finest of its kind. The dwarf pine (*P. Mughus*), of dense, broad squat form has a place for itself none of the taller sorts can fill, although we have pigmy varieties of some of the others, notably of the white pine and the Scotch pine.

While the pitch pine (*P. rigida*) is good enough for thickets I would not use it as a garden tree, no more would I the Jersey pine (*P. inops*) although I have seen many fine specimen plants of the latter. The long leaved Pacific pines as *P. ponderosa* and *P. Jeffreyi* live in the eastern and middle states, and I saw fine plants of both at Buffalo recently, but they are unhappy generally and not to be recommended. The lace bark pine of China (*P. Bungeana*), quite uncommon in nurseries, if grown in good soil makes an elegant evergreen in the garden. The Bhotan pine (*P. excelsa*) from the Himalayas is one of the most elegant of all trees with its wealth of long slender bluish-green needles, but it isn't very hardy. On Long Island it behaved very well. A Mexican species not unlike the last, namely, *P. Ayacahuite*, is growing beautifully at Dosoris, still I cannot recommend it as a hardy tree, besides it isn't quite as pleasing as the Bhotan pine. The sugar pine (*P. Lambertiana*) of the Pacific slope is hardy enough on Long Island, but it doesn't have that free, happy growth we like to see among our trees; we found out though that it loved moisture in summer, good soil, and a sheltered place.

Of strictly Japanese pines we have three species that behave admirably in the eastern states, namely *P. densiflora* and *P. Thunbergii*, two large timber trees, and *P. parviflora* a smaller tree from the high mountains. Thunberg's pine is the one called *P. Massoniana* in gardens. This is the pine tree that is so much cultivated in Japanese gardens and whose branches are trained out in long pendulous limbs supported by props. This is one of the cultural contortions of the Orient, however, that I hope we shall never introduce to American gardens.

My selection of pines would be: For shelter, the Austrian; for small gardens the Swiss Stone and the Korean; and for general ornamental effect the following in the order named: White pine, red pine, Thunberg's pine and Bhotan pine where hardy. That Japanese gem of a tree the umbrella pine is not a true pine, it is *Sciadopitys verticillata*.

WILLIAM FALCONER.

ARALIAS.

Probably the favorable season we have had for the development of plants has had much to do with the beauty of many that are flowering now. Both shrubs and trees seem never to have looked so beautiful. The tree aralias are in fine display at this writing. The good old standby, *A. spinosa*, attracts universal attention. At the top of its erect, spiny shoots are immense heads of small white flowers. As these flowers fade green berries take their places, and these, as well as the stems, quickly change to a rich red color. As the period from the time of the appearance of the first flowers till the disappearance of the fruit extends over some two months, the value of this tree can be understood.

The appearance of the aralia is familiar to many. An erect, prickly stem, with large, much divided leaves, and with the flowers and fruit as described. In size they are usually seen of about from ten to twenty feet. This tree is sometimes spoken of as being objectionable on ac-

count of its suckering habit, but no one need fear it on this account. It does occasionally put forth young shoots from below the ground from the roots, but these are usually quite close to the old one. And when once well established there are seldom suckers of any kind appear. On the other hand a tree that will form a little group in time is often desirable. In Fairmount Park, Philadelphia, is such a group of this aralia, and when in flower in September but few trees attract as much attention.

Many other aralias have been introduced into collections here from time to time under various names, such as *canescens*, *japonica*, *chinensis* and the like, but one and all prove in the end to be identical with our old friend, *spinosa*. The only one differing at all is one received under the name of *Dimorphanthus Mandschuricus* and which late botanists class as *Aralia chinensis*. This resembles *Aralia spinosa* in all respects, save that it flowers two to three weeks earlier. As an illustration I will mention that at this writing, the first week in September, the ripe berries are displayed on it, while the *Aralia spinosa* is just in full bloom.

Aralias are easily increased, either by seeds or by cutting the roots into small lengths, and planting them in the spring. Philadelphia. JOSEPH MEEHAN.

THE ITALIAN GARDEN ON THE ESTATE OF MR. H. H. HUNNEWELL, WELLESLEY, MASS.

The famous Italian garden at Mr. Hunnewell's is the most notable example in this country of this peculiar style of gardening and is pronounced equal to the best in Europe, from which it differs only in the absence of statuary, which is a prominent feature of Italian gardens. It was commenced thirty-five years ago, but many of the trees had been in course of special preparation for some time previous. It occupies a stretch of about 2½ acres on the steep hillside overlooking Lake Waban. The trees used are white pine, hemlock, several species of arbovitæ and retinosporas, golden yews, purple beeches, junipers and the European larch. The latter is very attractive, especially in early spring, with its soft light foliage. Some of the trimmed white pines are forty feet high and banks of hemlock are fifteen to twenty feet in height. The care and trimming of these and clipping of the steep sloping banks is slow, tiresome work. Trimming the trees and hedges begins in the first week in July. The hemlocks are not trimmed till September, that being the most favorable for them. A few clumps of rhododendrons are planted at the brow of the hill, and during their flowering season are very effective in this location.

The Greenhouse.

BULBS FOR WINTER FLOWERING.

It is now time to get the bulbs for winter flowering, and the sooner they are potted up the better chance they will have to make good roots before the winter sets in. One of the most important points to observe in growing bulbs in winter is to have good root action before forcing commences. More failures are due to trying to hurry them along too fast than to any other cause. We often see hyacinths and tulips with no flower stem and merely a little ball of flowers on the top of the bulb; this is caused by trying to flower them too quickly. It is well to examine each pot and take indoors

only the ones most advanced. They should not be put up to the light till the leaves and flower stalks begin to draw; set under the bench of a cool greenhouse they come along nicely; we generally treat them in this way. When the first batch is ready to be put on the benches we bring in some more and put under the bench, and so on as long as they last. In this way a regular succession of flowers is obtained.

The soil best suited for them is a rich sandy one, but most any good garden soil will do. Manure should not be used unless it be very old and well pulverized; otherwise it may cause the bulbs to decay, or encourage too rank a growth of foliage. In potting the bulbs do not press them into the soil as this packs it so hard under them that they are apt to heave out of the pots when they begin to make roots. After they are potted they should get one good watering to settle the soil. A bed of coal ashes in some sheltered spot is a good place to set them, covering them up with the same material, or sand, to the depth of four inches, and as the cold weather comes put on more covering of some sort so no frost gets to them.

There is a great variety of bulbs suitable for winter flowering, but perhaps the hyacinth is the one most used. The ones used for winter are the Dutch and Roman. The first named are generally grown one bulb to a 4 or 5-inch pot, although they can be grown nicely in pans with from six to twelve bulbs to a pan; but only one variety should be used to each pan, as in this way they will all come in flower at once, which is not often the case when a mixed lot is used. The Roman hyacinths if grown only for cut flowers are best placed in boxes which may be of any size, but boxes four inches deep and a foot square are a nice size to handle. They should be planted quite close together; an inch apart will do just as well as six and the flowers will be just as good. If grown in pots for greenhouse or window decoration five bulbs to a 6-inch pot makes a nice show.

Tulips make a fine show as pot plants. The Duc Van Thol varieties are the earliest to flower, but tulips are a peculiar plant to force. If it is gone at too soon, even though root action is good, failure is generally the result, in fact we have never had very good flowers till about the end of February, and March is time enough. After bringing them into the greenhouse we always set them under the bench till the leaves and flower stalk draw well up, as they so often flower with a short stem, making them useless for cutting purposes.

Narcissi are largely grown for winter flowers, the paper white being the one mostly used, the large bunch of flowers on long stems making them valuable for cutting. They can be treated the same as the Roman hyacinths. If grown for cut flowers only, boxes are best suited to grow them in. These can be forced very early and a supply can be had from December until March. The trumpet narcissi also do well in winter and for late flowering are very nice. Five bulbs to a 6-inch pot, of one variety, look well. The double Von Sion are also nice to force, but are no good afterwards as we notice the flowers always turn green when planted out after being forced. The Orange Phoenix and Sulphur Phoenix, both double, force nicely too. The Poet's narcissus is a sweet and lovely flower. *N. ornatus* is the best for pots. Plant the bulbs quite close together and don't be in a hurry to bring them inside; March is time enough. The jonquils make nice



THE ITALIAN GARDEN ON THE ESTATE OF MR. H. H. HUNNEWELL, WELLESLEY, MASS.

pot plants if grown quite close together in a 4 or 5-inch pot, and they last for some time. The same treatment as for hyacinths and tulips will also do for narcissi.

Freeseas we cannot have too many of as they are always in demand. For early we pot up a number about the first of August; our second batch was put in to-day (Sept. 1) and another planting will be put in about the end of the month. To have a succession these do not have to be buried like the Dutch bulbs, as they start to grow soon after being potted. They should be potted quite close together; ten to twelve bulbs in a 5-inch pot is about right. After potting they should not get too much water till they begin to grow. They should not be allowed to stand under the shade of trees, as this will draw the foliage and make them spindly. Plunged out in an open frame is the best place for them, as they can be protected with the sash when there is danger of frost. We like to leave them in the frames well into October as we then get a much more stocky growth than if brought into the house in September. When they are a few inches high put four neat stakes around the edge of the pot and run a fine string around to keep them erect; and as they grow put more string around.

Allium neapolitanum is a fine winter blooming bulb and sure to flower with every one. The flower stems are about twenty inches high bearing at the top a cluster of white flowers. They last a long time in flower either on the plant or cut. Plant five bulbs in a 5 inch pot and treat the same as hyacinths.

Scilla Clusi is a grand bulb to force in winter. It produces an enormous cluster

of star-shaped flowers which are often over two feet in circumference. Treat the same as freeseas. *S. siberica* has small sprays of blue flowers; if they are planted quite close together they make a nice show, but are of little use for cutting.

Ornithogalum arabicum resembles the hyacinth in bulb and requires the same treatment. The flower spikes grow about twenty inches high, bearing an immense cluster of large pure white flowers with a black center. When well grown it is a beautiful plant. It is also very fragrant and lasts a long time in flower.

The oxalis are a class of bulbous plants that always give satisfaction, their free flowering nature and ease of culture making them well adapted for window decoration. They are seen at their best when grown in hanging baskets. They start to grow at once after being potted and are best set in a cold-frame and treated the same as freeseas.

Triteleia uniflora makes a nice pot of flowers, but we like it best when grown in an 8 or 10-inch pan. The bulbs are very small and should be planted quite close together to make much of a show. Each one sends up several flower scapes bearing star-shaped flowers one inch in diameter. Treat the same as freeseas.

Ixias are beautiful for winter flowers but they are sometimes hard to bloom. One thing they like is plenty of drainage and a cool place. We have tried to force them in a warm house but failure was always the result. They are well worth all the trouble that is given them as their long sprays of various colored flowers are very useful for cutting. The sparaxis differs but little from the ixia, the only dif-

ference being that the flowers are larger and not so many of them on a spike, and they are more irregular in habit of growth.

The tritonias are nice to grow in connection with the ixias and sparaxis. The flowers are somewhat different in form as they usually droop instead of being carried erect. All three are Cape bulbs and require the same treatment as freeseas. A few pots of snowdrops are also nice for early winter. *Elwesii* is the largest and best to force. Crocuses can be had early in winter, but as pot plants they do not last long. Both the snowdrops and crocuses need the same treatment as hyacinths.

Iris anglica, *I. persica* and *I. hispanica* can be flowered quite readily in late winter. They won't stand much forcing and have to be brought along slowly in a cool house, but when in flower they present a charming array of fine colors and a few pots of them always attract attention.

There are many other bulbs that can be forced readily, such as the white and blue grape hyacinths, Bride gladiolus, calochortus, lachenalias, etc. All are interesting where room can be given them, and though only one pot is grown of each much pleasure will be had watching them grow and attending to their wants. All bulbs of small size, such as the ixias, sparaxis, snowdrops, crocuses, triteleias and others, should be grown quite close together if a good show is wanted. One bulb of a snowdrop or ixia in a pot has no show at all, but when ten to twelve bulbs are potted in a 5-inch pot the effect will be all that could be desired.

Mahwah, N. J.

DAVID FRASER.

SOIL FOR PALMS.

What mixture of soil is best for repotting palms.
Mrs. H. G.

The best soil for repotting palms is chiefly composed of rotted sods from a good pasture, this being prepared for use by cutting the sods some months before they are needed for the purpose, and stacking them up in a compact pile with an admixture of about one-sixth of thoroughly decayed barnyard manure, thus making an ordinary compost heap.

When needed for use this soil is chopped up and thoroughly mixed with a spade, and a little more fertilizer added in the form of bone flour, using about one quart of the bone to one bushel of the soil and if the soil is of a clayey character it is well to add a sprinkling of coarse sand. If such a compost cannot conveniently be procured, the next best substitute is some good garden soil enriched with the same proportion of fertilizers.

Such a soil will answer very well for arecas, latanias, kentias, phoenix and various other palms in common cultivation, providing they are potted firmly and watered carefully afterward, for success with these plants depends much more on proper care in watering, syringing and ventilation than on elaborate mixtures of soil.

In repotting do not disturb the roots any more than is absolutely necessary and make the soil firm in the bottom of the new pot before placing the plant therein, then ram the soil around the plant, and after the operation is completed give a good watering. When potted too loosely the soil will hold water like a sponge, and is likely to become sodden before the roots get a start.

W. H. TAPLIN.

THE CALIFORNIA VIOLET.

In spring of 1895 I purchased one plant of violet "California." Without perfecting blooms it produced seeds all summer. These seedlings I carried over and they are large and fine plants, but they are going through the same process of seed production. Is this natural, and will they produce satisfactory flowers next spring if wintered in a cold frame? Have kept runners cut off all summer.

C. F. DAVIS, JR.

The California violet has the habit of producing imperfect flowers or undeveloped petals but I wasn't aware that perfect seed would be formed from the imperfect flowers. It is certainly not a natural process, but abnormal. I would advise C. F. D. to divide the plants and place them at least 12 inches apart each way in the cold frame or house. And do not cut off the runners. It is from the runners that the flowers are produced. When the runners are kept pinched off during the winter the crop of flowers is a failure and that is why many commercial men are so dissatisfied with this beautiful violet. In a temperature of 40° to 45° at night I have found it very satisfactory.

WM. SCOTT.

The Flower Garden.

DETAILED PLAN FOR FLOWER GARDEN.

The accompanying plan is a section of the planting plan made for the grounds (five acres in extent) of C. L. Magee, Esq., of this city. The scheme of this garden is sufficiently explained by the specifications.

The variety of plants and shrubs used insures a succession of bloom from early spring until November. All the walks in this garden are of green sward which makes it far more attractive than if they had been made of gravel, cement or of any of the materials usually employed.

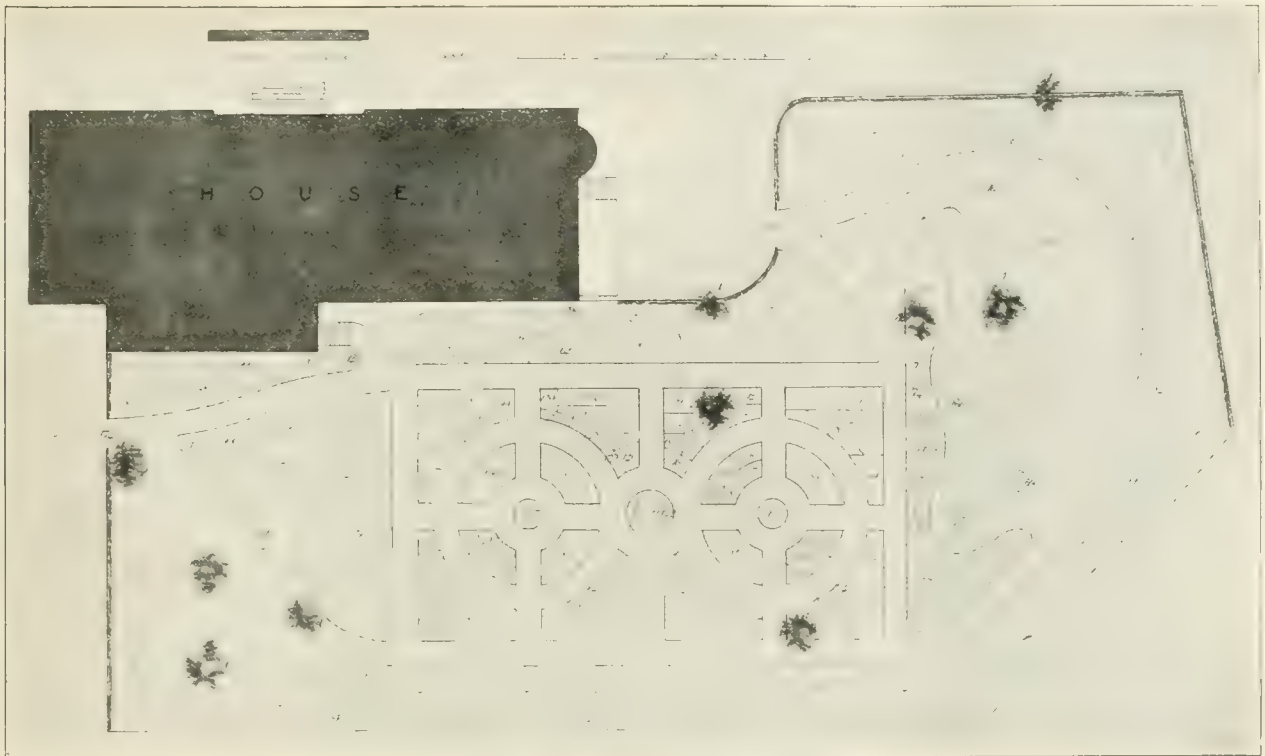
There are a few old trees in the garden and the planting near them is suitable for a shady location and vines have been planted to climb over some of them (old cherry trees).

The beds used for spring flowering bulbs are also used for annuals such as petunias, poppies, *Phlox Drummondii*, pinks, nasturtiums, and wignonette in the summer.

A portion of the planting of tall shrubs and small trees is designed to shut out of view out-buildings on the adjoining property.

PLANTING SPECIFICATIONS.

1. *Magnolia soulangeana*.
2. *Spiræa arifolia*.
3. *Clethra alnifolia*.
4. Rhododendrons and *auratum* lilies planted among them.
5. *Deutzia gracilis*.
6. Snowberries.
7. Rhododendrons and *auratum* lilies planted among them.
8. *Ligustrum ibota*.
9. *Cornus rubra*.
10. *Hydrangea paniculata grandiflora*.
11. *Colotea arborescens*.
12. *Spiræa Van Houttei*.
13. *Cercis occidentalis*.
14. *Viburnum plicatum*.
15. *Rhodotyus kerrioides*.
16. *Magnolia Soulangeana*.
17. *Itea virginica*.
18. *Rosa moschata nivea*.
19. *Aralia japonica*.
20. *Viburnum lantana*.
21. White birch.
22. Single white althæas.
23. Penzance sweet briars.
24. *Philadelphus cordifolia*.
25. *Eulalia gracillima*.
26. *Cydonia japonica*.
27. *Rhus glabra laciniata*.
28. *Magnolia purpurea*.
29. *Weigelia floribunda*.
30. *Hydrangea paniculata grandiflora*.
31. *Forsythia Fortunei*.
32. *Polygonum cuspidatum*.
33. *Vitex agnus castus*.
34. *Coraus florida*.
35. *Cratægus oxyacantha*.
36. *Hydrangea quercifolia*.
37. *Weigelia candida*.
38. *Clethra alnifolia*.
39. *Corchorus japonica fl. pl.*
40. *Azalea calendulacea* and *Lilium superbum* planted among them.
41. *Lonicera fragrantissima*.
42. *Spiræa Anthony Waterer*.
43. *Viburnum acerifolium*.
44. " *oxycoccus*.
45. " *dentatum*.
46. " *dilatatum*.
47. " *oxycoccus*.
48. " *Nepalense*.
49. " *nanum*.
50. *Spiræa Lindleyana*.
51. *Euonymus radicans variegata*.
52. *Cephalanthus occidentalis*.
53. *Hydrangea radiata*.
54. *Rubus odorata*.
55. Foxgloves.
56. Snowberries, red and white.
57. *Euonymus atropurpureus*.
58. *Itea virginica*.
59. *Corchorus japonica variegata*.
60. *Aster novæ anglæ*.
61. *Weigelia rosea*.
62. *Berberis Thunbergi*.
63. *Clematis paniculata*.
64. *Spiræa tomentosa*.
65. *Erianthus ravenneæ*.
66. *Azalea mollis* and *lancetium* lilies planted among them.
67. *Sambucus pubens*.
68. *Hypericum Moserianum*.
69. Ghent azaleas, *Canadense*, Turk's Cap, *Superbum*, *Browni* and *longiflorum* lilies.
70. *Mahonia aquifolium*.
71. *Spiræa Thunbergi*.
72. *Rosa rugosa alba*.
73. *Rosa pomifera*.
74. *Euonymus atropurpureus*.
75. *Ceanothus americanus*.
76. *Rosa rubrifolia*.
77. *Spiræa salicifolia*.
78. *Berberis Thunbergi*.
79. Assorted flowering almonds.
80. *Rosa rugosa rubra*.
81. H. P. roses.
82. Aquilegias, single long-spurred.
83. Hardy pinks.
84. Japanese iris.
85. Single early tulips and annual pinks.
86. Narcissus Sir Watkin.
87. " Orange Phoenix.
88. " Ard Righ.
89. " *bicolor Horsfieldi*.
90. " *odorata fl. pl.*
91. Sweet peas.
92. *Lobelia cardinalis*.
93. *Campanula Mariesi*.
94. Tiger lilies.
95. *Dictamnus fraxinella*.
96. Tall phlox.
97. *Myosotis semperflorens*.
98. *Spiræa palmata*.
99. Japanese iris.
100. German iris.
101. Tall phlox.
102. *Spiræa filipendula*.
103. *Sedum spectabile*.
104. *Tritoma grandiflora*.
105. *Funkia alba* and *Clematis paniculata* to climb tree.
106. Tall English delphiniums.
107. Narcissus, single jonquils.
108. " *bicolor Horsfieldi*.
109. " Campernelles.
110. " Emperor.
111. " Golden Spur.
112. Single early tulips and *Phlox Drummondii*.
113. Florists' pinks assorted.
114. *Boltonia latissuama*.
115. *Ceanothus biennis*.
116. *Iberis sempervirens*.
117. Single hollyhocks.
118. Single hollyhocks.
119. *Pentstemon Torreyi*.
120. *Anemone japonica alba*
121. *Phlox subulata*.
122. *Anemone japonica rosea*.
123. *Desmodium penduliflorum*.
124. Rudbeckia Golden Glow.
125. Rudbeckia speciosa.
126. *Cypripedium spectabile*.
127. *Viola cornuta*.
128. Lily of the valley.
129. *Campanula carpathica*.
130. *Montbretia crocosmæflora*.
131. *Chrysanthemum latifolia*.
132. *Liatris pucnostachya*.
133. *Viola pedata*.
134. *Delphinium formosum*.
135. Gesneriana tulips and gladioli.
136. Parrot tulips and calliopsis.
137. Sweet peas.
138. Late tulips and Shirley poppies.
139. *Narcissus biflorus*.
140. " Silver Phoenix.
141. " Von Sion.
142. " Campernelles.
143. Single jonquils.
144. *Gaillardia grandiflora*.
145. Tall phlox.



DETAILED PLAN FOR A FLOWER GARDEN.

146. *Heliopsis Pitcheriana*.
 147. Single pæonies.
 148. *Heuchera sanguinea*.
 149. *Tritoma grandiflora*.
 150. *Spiræa aruncus*.
 151. Aquilegias, assorted single.
 152. *Pulmonaria maculata*.
 153. *Hemerocallis flava*.
 154. Tall phlox.
 155. *Heliopsis Pitcheriana*.
 156. *Helianthus rigida*.
 157. Double pæonies.
 158. *Helianthus lætiflora*.
 159. " *orgyalis*.
 160. *Funkia Sieboldi*.
 161. *Onoclea sensibilis*.
 162. *Struthiopteris germanica*.
 163. *Coreopsis lanceolata*.
 164. *Phlox subulata alba*.
 165. *Rhododendron Everestianum*.
 166. Japanese maples.
 167. *Rosa setigera* to climb old cherry tree.
 168. *Lonicera Morrowi*.
 169. Japan weeping cherry.
 170. Chinese rhubarb.
 171. Iron wire arch with *Rosa Wichuriana* trained on it.
 172. Iron wire arch with Crimson Rambler rose trained on it.
- A. A. A. A. A. Large old trees, cherry, elm, etc. J. WILKINSON ELLIOTT.

NOTES ON DAHLIAS.

For late summer and fall decoration of the garden the dahlia is indispensable. This has been a fine season for them, plenty of rain and cool nights, and this is what dahlias love. They have made a strong growth and are flowering in fine shape. We have not noticed one imperfect flower among them, and this is not often the case where a large assortment is grown.

The culture of the dahlia is simple if two important points are observed, namely plenty of rotted manure, well incorporated with the soil, and plenty of

water at all times. They should be planted in a part of the garden where they will have some protection from high winds, or unless they are properly staked they are liable to be broken down, in fact they seem to do better in partial shade than in the open. They should be planted three feet apart each way and given a good mulching of rotted manure to help retain moisture. When planting we always leave a hole around each plant and fill the same with the mulch; in this way each plant can have a can of water and receive the full benefit of it as the hole keeps the water from running off. We have found this a good plan, as in our dry summers water is often scarce and hosing has to be done in a stingy way.

Dahlias are divided into five different classes, namely show and fancy, single, cactus, pompon, and Tom Thumb or bedding. The show and fancy dahlias are the ones mostly seen in our gardens, but since the cactus forms were introduced people seem to like them better, and deservedly so, for they are far more graceful and better adapted for cutting purposes; the big double flowers of the show and fancy sorts are so stiff that there is little call for them. The single dahlias if of good sorts are all that could be desired for cut flower work. They generally have good long stems and the flowers are very graceful. They flower very freely and if kept well watered they make a fine show in the garden from August until cut by frost. The cactus dahlias are the most beautiful of them all. Their big open flowers on long stems are very graceful and they are one of the choicest flowers we have for cutting. They do not grow so compact as the old double sorts, but they are all the better for this as they show off their flowers to better advantage. The pompon dahlias are not much seen in gardens, but they are pretty little plants when well grown. They are of compact habit, growing about three feet high, the flowers small and very double and carried

well above the foliage. The Tom Thumb varieties grow only about fifteen inches high and form a compact little bush. The flowers are single, in many colors. They are not often seen but they are well worth a place in every garden.

Dahlias are increased by division of the roots or from cuttings and seeds. The most common way, and the one mostly used, is root division. This is done about the end of April. The old roots are broken up into as many pieces as there are eyes, or as near to it as can be done, but it often happens that there are two or three eyes together, and in this case when they begin to grow the weakest ones can be rubbed off. We like to give them a little start in a cold frame before planting them out. We set them in the frame quite close together and cover them up with soil and put on the sash till they start to grow, when it is removed to get a hard stocky growth, but the sash is always put on at night till all danger of frost is over. Where a cold frame is not to be had the dry roots can be planted out where they are to flower, but they will be later in flowering. We have often seen amateurs planting out the whole dry root just as it was lifted from the ground the fall before, but this is a bad plan as so many shoots start from the root that they form a rough looking bush and the flowers are always small and inferior and never give so much satisfaction as where only one shoot is grown.

Propagation by cuttings is a very satisfactory way of increasing the stock and often gives better results than root division. It is easily done by starting the old roots in February and taking the cuttings off as they grow. They root very quickly and if kept growing they will make nice blooming plants by the middle of August. Another good way is to put in the cuttings by the 15th of September and grow them on in 3-inch pots till about the new year, then dry them off to give the roots a rest, repotting them

about the end of April. In this way there are nice little tubers to plant out. The best dahlias we have in the garden were treated in this way and we have just finished putting a big batch in the cutting bench, as I think it pays better to winter over these small roots than it does to lift and winter over the old ones.

To raise dahlias from seed is a very simple matter as they germinate quickly and grow very fast. They should be sown in the early part of March and potted off singly when large enough. The single ones are the best from seed, and where cut flowers are much in demand a patch of them will not go amiss in any garden. The double ones are not often raised from seed except when new kinds are sought after, as it often happens that not one good flower will be had out of fifty plants. We have a patch of about one hundred in the reserve garden but what we will have out of them we cannot tell as they are just beginning to flower.

After the first hard frost they should be lifted, the dead stems cut off and the roots left to dry a little; leave on a little soil, as this helps to keep the tubers plump. They can be wintered safely in any frost proof cellar or under the benches of a cool greenhouse, but no water should get at them or they will start to grow.

Mahwah, N. J. DAVID FRASER.

HERBACEOUS PLANT NOTES.

Toward the end of the summer we find that a great many owners of gardens are not so particular about the looks of their borders or beds as they would be in spring or summer. Most of the plants have done their duty, have flowered in their time, the proprietor has enjoyed their beauty, and as summer is about over, he has made up his mind that it is not worth while to expend any more time and labor on the beds for the present season, because we may expect a sharp frost most any night, and what few flowers there are left would very likely be destroyed then anyway. For several weeks, sometimes much longer, the garden looks neglected while the weather is still pleasant and our hardy plants have not suffered seriously from the effects of an occasional light frost. If the borders had been kept clean and as neat as during the earlier part of the season, the decaying leaves and the old flower stalks removed, the general appearance of the place would perhaps be greatly improved and enjoyed as much as ever, especially where some of the fall blooming plants have been freely introduced.

The owner has not lost interest in his plants nor has he any intention to neglect them or his place, for next spring we may see him work among his beds just as hard as ever, he simply thinks the season for flowers is over about the middle of September and he is then merely waiting for the foliage to ripen before giving everything a last cleaning up for the year. Or it may be that he is not familiar enough with our late summer or fall blooming plants, some of which flower up to November and many of them are as attractive as our early spring flowers. The introduction of a few clumps of September and October flowering plants here and there between the earlier blooming subjects would greatly assist in keeping up a cheerful, or often even a gay, display of color in the beds until snow and hard frost will put an end to all vegetation. We should under all circumstances remove the decaying leaves and flower stems once a week regularly, even late in

fall and in cases where no more flowers may be expected from the plants; the foliage in itself is often attractive and ornamental enough as long as no rusty or ripe leaves are intermingled with the others. Everybody knows that a bed of plants is greatly improved in looks by a thorough cleaning, whether they are in bloom at the time or not, therefore we must not neglect to go over them as regularly toward the end of the season as in the beginning if we want to enjoy the full benefit or beauty of our beds.

In the herbaceous borders we can have quantities of flowers long after most of the ordinary bedding plants have succumbed to the cold, and if we would provide a well sheltered warm position exclusively for late summer and fall flowering plants, we could there enjoy in October what in other gardens and under ordinary conditions would seem impossible. A sunny spot, protected from the north and west, is an ideal place for growing late flowers; many of the summer and early fall bloomers will continue for a long time in such a position.

Campanula carpathica of all shades will send up new flower stems unceasingly, *Campanula Van Houttei* flowers early in the season and brings a good second crop of its large long bells in September, lasting until late in October. *Tunica saxifraga* is constantly covered with a profusion of little delicate flowers. *Saponaria caucasica* fl. pl. is to be highly recommended, not only on account of its early and late flowering qualities, but also for its pleasing bright salmon color. *Verbena venosa* blooms very late, *Malva moschata* holds out good through September, gaillardias are indispensable, the trailing branches of *Callirhoe involucrata* will perfect new flower buds at every joint as long as the weather permits them to grow, and their brilliant deep colored flowers have no equal so late in the season. The immense mass of small purple flowers on *Linaria purpurea* in cool weather is astonishing. *Salvia farinacea* is exceedingly useful in such a place, blooming early and late. The pretty *Lychnis vespertina plena* will hold out as well as the smaller pink flowered *L. semperflorens plenissima*. The flowers of helianthemums will last longer in the cool fall weather than in summer. *Phlox suffruticosa* always perfects a second crop of its loose panicles during September and October. Montbretias of various sorts make a fine show anywhere during the latter part of summer and in fall.

The everblooming *Silene maritima* fl. pl. should not be missed. *Silene Schafae* will flower freely in a more shaded spot and if a moist corner can be found the second crop of the beautiful *Caltha palustris* fl. pl. will last from August to severe frost. *Sidalcea malvaeflora* and *candida* would bloom for a long time there. *Coreopsis grandiflora* I have seen flower profusely even in November but the old stems must be kept cut. Statice always look well. *Cimicifuga racemosa* with its tall and branchy spikes keeps well throughout September and often later. A second crop of *Delphinium formosum* and *hybridum* is often out from September to October. *Chrysocoma linosyris* lasts well through these months. *Polygonum amplexicaule*, *P. affine* and *P. cuspidatum* are all good late bloomers. *Daphne cneorum* blooms in spring and late in fall. *Viola cornuta* is full of flowers until severe frost. The fall blooming aconitums, the boltonias, chrysanthemums, Japanese anemones, scabiosas, armerias and many varieties of asters and helianthus will all flower late in the season.

We could also plant a lot of colchicums, *Scilla autumnalis* and other bulbous plants, all of which would contribute their share toward the embellishment of the beds in fall. A few *Desmodium penduliflorum* and *Caryopteris mastacanthus* would not be out of place among them and there is a host of other plants which might be mentioned, though the list as given above shows plainly that fall flowering plants are not at all scarce and our borders could present an attractive appearance long after our ordinary bedding plants have been destroyed by frost.

Even in the limited space of a city lot, we may find a place for a bed of autumn flowers; a southeastern exposure will be just what they want; here they are sheltered from the cold northwest winds and will often mature perfect flowers in the month of November, while the same species planted in an unprotected position would have ceased to flower several weeks or a month earlier. Fall flowers are appreciated as much if not more than the earliest spring flowers by nearly all lovers of nature; the last rose of summer possesses the same charms for us as the first one of the season, then why should we not try to have them in the garden as long as possible each and every year. All that is needed is a judicious selection of these hardy plants and the right place to grow them in.

J. B. KELLER.

CLEMATIS PANICULATA AND MOISTURE.

We have been told many times that that royal fall bloomer, *Clematis paniculata*, requires abundant moisture, but we are apt to overlook this fact, or to misjudge what is meant by abundant moisture. Once in a while some event, by accident or otherwise, happens that teaches an observing person a lesson more indelibly impressed than knowledge gained by burning the midnight electric light. I have had an object lesson very forcibly grafted upon my memory.

I have eight old plants of the *C. paniculata* set within twenty feet of each other, growing in the same natural conditions of soil, and under the same climatic influences. Four of them, in a "bay" caused by the projections of the building, are subjected to an unusual supply of water. The pipe at the eaves carrying the water from the roof had sagged, and to relieve it was tapped by an inch pipe and the surplus water carried down to the roots of these four plants. The pipe extends to within six inches of the soil, thus allowing a V shaped wooden trough to be placed under it in winter and carry the water out to a roadway. Immediately under the pipe is a "pocket" of gravel connected with which is a three-inch tile crossing the centre of the bed containing the four plants and ending within it. This bed is two feet deep and very nearly five feet square. The plants have been there two years.

Last year from early June until fall I noticed that the four plants thus favored outgrew the others. All the eight plants have received their usual quota of water when the season was dry. This year was one of unusually heavy rains, and at times this bed became so saturated that the water overran it, and I have watched the effect with interest. Two of the eight plants are within three feet of a cellar wall, being in the best drained situation of the lot. On June 23 these two were six feet high; two having no under-drainage, were seven feet, while those supplied with extra moisture by the pipe, were nine feet.

The behavior of these plants two sea-



HYDRANGEA ON THE PORCH AT EGANDALE.

sons in succession in outgrowing their less fortunate brethren, certainly emphasized the fact that this clematis not only needs ample moisture for successful culture, but that it is almost impossible to give it too much during the summer months. The bed in which they are growing is not tile drained, but is of a rather light soil in a hole dug in a sandy clay loam.

W. C. EGAN.

HYDRANGEAS FOR PORCH DECORATION.

P. M. asks about the treatment of *Hydrangea Otaksa* for porch decoration

1. How should they be treated after blooming? *Ans.* All that is required after blooming is to cut off the flower heads but do not cut far back and take the flower heads only. Set away in some place where they can get full attention in regard to watering as they should never be allowed to get dry at the root.

2. If cutting back is to be done, state where to cut, and whether the shoots that come from the base of plant and flower are to be cut back the same as the older wood. *Ans.* After the plants are well ripened in October they can be cut back a little, but the final pruning is better left till the spring when the plants should be well pruned, cut back to about two plump buds to each shoot; that is leave two joints; each joint has two buds, rub off one bud at each joint, one at each side of the shoot; the shoots that start from the base of the plant, if they flower and there is room for them without crowding the plant, retain them, but if the plant is well furnished I would cut them out. All weak shoots should be cut out as they appear; this will throw all the strength into the other shoots and give better buds for another year.

3. When flower buds are expanding are the weaker ones cut out? If so, how far back? *Ans.* If your plants are well furnished with large flowers and a little crowded, cut them out altogether, but this is not necessary. Your own judgment

will have to govern. One of the main points to watch is not to let your plants get too crowded in the center. Let the light get in; in this way you can always expect good buds, but if your plants are left to themselves and all shoots retained, all the buds in the center of the plant will be weak and not apt to flower.

4. Is it advisable to change the soil each year? If so how is it done, and when? *Ans.* If your plants are in large tubs it is not necessary to change the soil each year; every second year will do. The best time to repot is in spring before the plants begin to start into growth. This is a job that has to be carefully done, as the buds are easily broken off. Our mode of doing this where very large tubs are used is this: A pulley is attached to the ceiling of the work room, a stout soft rope with a hook on the end is tied around the base of the plant, the rope run through the pulley and the plant is raised up. The tub is then removed by striking the top with a hammer. The ball of roots is then loosened and part of the old soil taken away. The new tub, well drained, is then put under the plant and it is lowered into it and the soil rammed in with a stick just as hard as it can be. Where many plants are to be handled this is a good way to do, and a great many can be done in a short time.

5. Will a frost-proof cellar do to keep them over winter? *Ans.* Yes. Although a few degrees of frost won't hurt them it does them no good. A cellar with a temperature running from 35° to 40° is about right. They should never get dust dry in their winter quarters, but no more water than is needed should be given.

DAVID FRASER.

GOLDENRODS.

Among some notes sent you recently were some referring to three goldenrods noted for producing their flowers in axillary clusters. These were *Solidago cæsia*,

S. latifolia and *S. bicolor*. Goldenrods are so beautiful and so useful for garden adornment that I am tempted to continue the subject to the extent of mentioning some other species of value which are native to these parts. As is generally known the genus is nearly altogether an American one, one only, *virga aurea*, being of European origin. So valued are our kinds in Europe that it is common to find some of them in all extensive gardens.

It is common to think of these flowers as accompanying late fall. It is true there are late flowering species which can be found in bloom in November, but it is equally as true that there are sorts that flower in July. I have seen one of the early blooming ones, *patula*, in full flower in July, and in particularly favorable situations blossoms have been culled as early as the fourth of July.

There is no doubt of the utility of these plants for general garden decoration, as all are of easy growth and can be propagated rapidly and cheaply.

I will give a list of the dozen kinds familiar to me as growing wild in this vicinity, naming them in the order of their flowering. The first named can be gathered in the woods in July and the last one in November: *odora*, *bicolor*, *patula*, *serotina*, *latifolia*, *canadensis*, *lanceolata*, *tenuifolia*, *altissima*, *nemoralis*, *sempervirens* and *cæsia*. I should say that *sempervirens* is not native to our woods but comes from near the shore, in New Jersey.

As a further guide to those who may wish to plant and arrange for the order of flowering let me say that I am writing this on September 3, and the following kinds are not yet in flower: *altissima*, *nemoralis*, *sempervirens* and *cæsia*. I have referred to the last named one before as being such a beautiful and graceful kind. This is the one that I have found in November at times, usually at that time in some woods where its growth had been retarded.

This summer having been a wet and

warm one, has brought out all golden-rods to great perfection. I never before saw them so fine. I pass a group of *serotina* every day, the plants of which are five feet high, likewise some *canadensis*, which are six feet.

As may be surmised from the number of plants usually growing together, they increase rapidly. When seeds fall on favorable ground seedlings will soon show in abundance. The clumps of *serotina* and *canadensis* spoken of above are from self sown seed, not more than three years ago; and then, if desired, a good clump of any one plant can be divided to make a dozen.

odor left, but it is strongest in the first year after picking.

The spikes should not be gathered before they are full grown and most of the flowers are well developed; when in this condition their perfume will last longer than when picked in an earlier stage of development. The spikes should be dried in a dark and airy place, either by hanging up in small and spready bunches or by scattering them thinly on flat open screens until all the sap has evaporated from the stems; when allowed to dry in large bunches or in heaps, they are liable to get mouldy, which would surely spoil their agreeable odor.

K.

but as it was from me you got the seed I hardly think I made such a mistake. I will send you a few more seeds to try again.

DAVID FRASER.

WOODBINE—FERNS.

Enclosed is a leaf of woodbine taken from a vine growing on the porch on the north side of my house, but it gets the afternoon sun. About the middle of July the leaves begin to turn yellow and drop off, while vines from the same source, growing on the fence about thirty feet away, are always strong and vigorous. I have tried tobacco water with no success. Is it likely that the ground is too rich or deficient in certain qualities? What can I do for it?

You will also find enclosed a fern leaf that comes from a plant that is dropping its leaves and apparently dying. Are the spots on the back an indication of disease, and if so, what is it and what is the remedy?

A. J. C.

The leaves placed under a microscope appear to indicate injury from some fungous attack, but not clearly so. If no insects have been observed on them the disease may be considered of fungous origin. If, as we understand, the same vine is injured every season, while others but a little distance away are not, it would indicate something existing in the plant inviting attack, and it might be the best thing to replace both vine and soil. Tobacco water is for leaf-sucking insects; Bordeaux mixture should be used for fungi.

In the opening of your letter the fern leaf disappeared before being examined, we regret to say, but if we can be of further use to you it would give us pleasure to serve you. Ferns are rarely troubled by fungous attacks. Insects are their chief pests. If your fern is suffering from insect attacks, having now lost its foliage, keep it on with but little water until fresh fronds show, then give it fresh soil and a chance to grow. It is possible that the spots on the back of the leaf are the spore cases.

Water Falls.

WATER TOWER AND FALLS AT RAVIN-OAKS.

Highland Park, Ill., situated on the bluffs of Lake Michigan, some 23 miles north of Chic go, is noted for its deep and thickly-wooded ravines, forming natural scenery of great beauty. These ravines, of which there are many, start as a rule within a few miles of the shore of the lake. At first they are mere depressions, almost unnoticeable, but gradually widen and deepen, until by the time they reach the water's edge they are nearly ninety feet deep and from three to eight hundred broad at the top.

In a few instances, notably at Fort Sheridan, a few miles north, and at the "Ravine Drive," within the limits of the city, they have happily been utilized as pleasure drives, where the overhanging boughs of the native trees growing upon the banks form a natural arbor and a pleasing shade. Were these ravines supplied with constant running water much would be added to their charm, but with the exception of after the melting of the winter's snows and occasional heavy rains, their bottoms are dry. Many charming summer homes have been established



THE WATER TOWER AT RAVIN-OAKS.

I like fall sowing of these seeds as the best of all plans. A little bed can be prepared in late fall, the soil smoothed off nicely and the seeds sown, covering the seeds lightly with fine, light soil. The seedlings will appear very early in spring, and if transplanted early the strongest of them will flower the same season. Where a piece of waste ground exists scattered seeds will bring a crop of plants in a short time.

JOSEPH MEEHAN.

Philadelphia.

LAVENDER FLOWERS.

At what stage of their development should I pick the flowers of the lavender to obtain the best results in keeping them dry for their perfume?

W. W. O.

The dried flower spikes of *Lavandula vera* (commonly called English lavender), were at one time within my remembrance used quite extensively for scattering in the bottom of bureau drawers to impregnate with their pleasant odor the wearing apparel kept therein. Bunches of the flowers were formed into all sorts of fancy shapes; with the aid of ribbons or pieces of silk, pincushions, bottles, fans, etc., were manufactured, handkerchiefs or jewelry boxes and other receptacles were lined and upholstered with the fragrant spikes, but this fancy has apparently died out and the flowers are seldom used now for such purposes. They, however retain their fragrance for a long time; even after several years there is still a faint pleasant

DAHLIAS—PLATYCODON.

Mrs. F. N. B. writes: "In your notes of July 15 you speak of having dahlias in flower. How can you get them in flower so early? Our dahlias don't commence to flower till August. What varieties do you grow?"

Our dahlias came in flower on the 2d of July, and by the 15th we had a good show of them. They had no special culture. We started them on the 15th of April and planted them out on the 20th of May. They were about ten inches high when planted out. This season was a good one for them, having plenty of rain and not too warm weather. Our varieties are most all numbered instead of named, but most all of them were in flower by the 15th, though in dry seasons we would not expect good dahlias before the first of August.

"*Platycodon Mariesii* the first year from seed only grew about ten inches high and I was very much pleased with it as an edging plant, but this, the second year, it has grown two feet high and has the same stiff habit of the type. Does it always do like this?"

Platycodon Mariesii with us grows only about ten inches high. We have plants a few years old and they have never grown much taller. *Platycodon grandiflorum* grows about two feet high, and we notice that the first year from seed it is much dwarfer when it flowers than it is the second year. Perhaps this is the one you have instead of *Mariesii*,



RAVIN-OAKS FALLS, HIGHLAND PARK, ILL.

within the past few years where the possession of a ravine is a prize much sought for.

Ravin-Oaks, owned by Mr. Chas. W. Fullerton, is probably the most extensive of these new domains, and has had the aid of Mr. F. L. Olmsted in the arrangement of the grounds. To Mr. Fullerton himself, however, must be given the credit of introducing in a natural and artistic manner the mystic charms of running water. Choosing a place some fifty feet "up the ravine" from a large rustic bridge whose span must be some fifty feet, and in the center of which is a rustic arbor overhung with the wild grapevines

springing up from below, he first built a broad dam across the ravine, facing it with boulders, and planting it with ferns and other suitable plants. In this dam he built a reservoir of sufficient capacity to contain water enough to run the falls for a considerable length of time. By the aid of wires leading to the bridge the water may be turned off or on at will. Sitting upon this bridge, surrounded and almost hidden by the heavy foliage of the native trees and vines, and bearing only the music of the running water and the songs of the birds, one forgets that the situation is formulated by man, and created from material near at hand, and

readily imagines himself amid the solitude of woods, away from the haunts of man. The illustration of Ravin-Oaks Falls speaks for itself.

While the grounds are supplied with running water from the city's mains, these falls are supplied with water pumped up from Lake Michigan by windmill power. This windmill, here illustrated, and its accompanying outlook tower is situated quite near the edge of the bluff overlooking the lake. As the entire shipping interests passing between Chicago and Milwaukee come within a few miles of the shore, the views from this outlook are unsurpassed.

W. C. EGAN.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE FIRST annual convention of the Amateur Florists' Association of Kansas will be held at Topeka September 30 in the state capitol, on floral day of festival week.

CIRCULAR No. 16 of U. S. Dept. of Agriculture, Division of Forestry, is an interesting illustrated essay on the "Age of trees and time of blazing determined by annual rings."

MESSRS. Ellwanger & Barry, Rochester, N. Y., have shipped a collection of 125 varieties of pears to be shown at the International Horticultural Exposition at Hamburg the latter part of this month.

GRAFTING THE APPLE.—Bulletin No. 65 of the Experiment Station at Manhattan, Kansas, covers this subject in a comprehensive manner, and there are numerous illustrations showing the results of various methods of grafting the different varieties of the apple.

THERE is a new "everlasting label" now on the market that promises to fill the wants of amateurs in that line. It may be described as a narrow flat glass bottle open at the bottom and closed at the top. The top extends above the "neck," terminating in a rounded knob wider than the neck. A copper wire encircles the neck, to be used in attaching it to any plant. Two cards can be slipped into the opening at the bottom and the aperture then sealed with cement. On one card or one side of a card, if only one is used, may be written the botanical name and date of planting, on the other side the common name, etc. They cost about \$3 per 100.

ANNUAL EXHIBITION OF THE MASSACHUSETTS HORTICULTURAL SOCIETY.

The annual plant and flower exhibition of the Massachusetts Horticultural Society was held in Boston, September 2 and 3. It was, as most of the exhibitions of this society now are, free to the public, and the halls were crowded continuously.

The upper hall was devoted exclusively to the plants, which were arranged in enormous groups with serpentine walks among them, forming a very pretty effect but necessarily crowded so that the beauties of the gigantic and stately palms, tropical foliaged plants and superb specimen ferns were but poorly displayed. No better argument for a new hall is needed than is presented in a visit to one of these annual shows.

Nothing finer in groups of foliage plants has been staged here for a long time than the collection shown by J. S. Bailey (Wm. Donald, gardener), and that from John L. Gardner (Wm. Thatcher, gardener) was a close second. A beautiful specimen of *Alocasia Sanderiana* in Mr. Donald's group was awarded a silver medal for superior culture. In the lesser sized groups and in the palm classes J. H. White (J. H. Wheeler, gardener), Dr. C. G. Weld (K. Finlayson, gardener), John L. Gardner and N. T. Kidder (Wm. Martin, gardener), competed, and rare and beautiful specimens abounded. J. H. White's *Eurya latifolia variegata* was a stately example of this beautiful plant. A certificate of merit went to Dr. Weld's *Heliconia illustris rubricaulis*. Other perfect specimens in Dr. Weld's groups were *Dracæna Doucetti*, *Acanthophoenix crinita* and *Licuala grandis*. The judges were so pleased with a collection of thirty varieties of crotons from J. E. Rothwell (J. Mutch, gardener) that they voted it a silver medal.

Caladiums were grand. They came principally from N. T. Kidder and Dr. C. G. Weld. Some of the best varieties were La Perle du Brazil, Candidum, Leopold Robarts, Triomphe de l'Exposition, Excellent, Sir Walter Scott, Itique Reine Marie de Portugal and Princess Alexandra. Harvard Botanic Gardens (Robt. Cameron, gardener) contributed a large group of decorative plants in which *Martinezia simplex*, *Geonoma serrata*, *Kentia McArthurii*, *Myriocarpa stipitata*, *Nephrolepis exaltata* var. *hirsutula* and *Nephrolepis acuta* were conspicuously fine. A collection of Japanese plants and curiosities including dwarfed and contorted ferns, cycads, bamboos, pines, maples, etc., was shown by B. Muto and the odd things attracted much attention from visitors.

Ferns were shown in good variety and form by J. H. White, Dr. Weld, E. S. Converse and John Jeffries, and lycopods by Dr. Weld. A specimen of *Nephrolepis exaltata* measuring eight to ten feet from tip to tip of the drooping fronds came from C. H. Souther. *Begonia Rex* from E. S. Converse (D. F. Roy, gardener) and Jas. L. Little were very good. The latter showed a set of twelve splendid Rex hybrids, plants averaging three feet across, and a good group also came from W. S. Lincoln. There were fewer orchids shown than usual. A group of ten cypripediums from J. S. Rothwell included the beautiful *C. Corningii*.

Flowering plants were more in evidence than has generally been the case at these annual plant exhibitions and these helped out the crotons and caladiums in supplying the necessary brilliancy where color would otherwise have been badly missed. J. H. White contributed a large number of fuchsias and flowering begonias. Can-

nas in bloom came from John Jeffries, J. L. Little and J. W. Howard. Two specimens of *Begonia Haageana* with massive pendent clusters of flowers from Jas. L. Little (Geo. P. Green, gardener) were among the finest things shown and there was an unusually well grown pyramidal *Clerodendron Balfourii* from N. T. Kidder. Mr. Kidder also showed *Chironia exigua* with an abundance of pretty pink blossoms, and C. H. Souther had a fine specimen of *Anthurium Brownii*.

In the cut flower department which was confined to the lower hall and corridors there was a bewildering sea of color. There were nasturtiums, marigolds, zinnias and other garden favorites in profusion and dahlias fairly overwhelmed everything else. There were dahlias enough if well displayed to fill the lower hall. Good judges pronounced the dahlia show to be the best ever given in this country. There were show, fancy, cactus, liliputians and singles in endless variety and the popular interest in the dahlia was very evident. On general display filling one hundred or more bottles the prizes were awarded respectively to H. F. Burt, W. C. Winter and Lothrop & Higgins. John Endicott & Co., L. W. Snow and John Parker divided with the above exhibitors the premiums on the special classes and large quantities were staged by W. W. Rawson. There was considerable confusion as to classification and quite a number of disqualifications for informality were noted in consequence. The reviving importance of the dahlia as an exhibition flower makes it imperative that a standard classification be adopted and well understood hereafter.

The aquatic plants, of which there were large tanks from Oakes Ames and L. W. Goodell, were as usual greatly admired. H. A. Dreer showed *Nymphæa Doogeeana* and *Nymphæa Gurneyana*, two new seedlings, the former white with a soft pink flush, the latter deep red.

Interesting individual exhibits were gladiolus "White Lady" from H. A. Dreer, improved Drummond phlox and verbenas from L. W. Goodell, zonal geraniums from George Hollis, seedling coleuses from C. A. Perkins, *Nymphæa Devonensis* from W. B. Shaw, dahlia "Seraph" from Edwin Davenport and seedling canna "Sen. Geo. Peabody Wetmore" from Robert Christie.

There was a large display of foreign grapes contributed by Miss E. J. Clark, I. H. White, E. S. Converse and W. C. Winter.

Mushrooms.

MUSHROOMS.

The cultivation of mushrooms seems to be a mystery to many people. Although on many occasions practical instructions in regard to growing mushrooms have appeared in the pages of GARDENING, there is still a number of subscribers in the dark, as it were, and who wish for more explicit information. Some of them ask if mushrooms will grow in any good garden soil, showing their knowledge of the business is not quite clear, and to these amateurs who wish to try mushroom growing we will endeavor in a simple way to tell them how to do it.

Mushrooms will not grow in soil alone, that is during winter. We have grown them outdoors in summer with fair success and now have a large patch planted from which we hope to pick some mushrooms when the cool nights of September

come, and these will be grown in soil. But for winter culture manure is needed, and the best is horse manure. Get enough of it together to form a bed fifteen inches deep, and if your cellar is cold a few inches more will not matter; the whole secret of mushroom growing being to have the manure in proper shape to begin with. I think more failures can be traced to poorly prepared manure than any other cause.

My mode of growing mushrooms, and which has always been successful, is this: I go to the manure pile, just as it is thrown out of the stables, shake out sufficient moist manure to make up my bed, putting it under a north facing shed to keep all rains and sun from it. It is then gone over again and all the short manure shaken out, putting the straw to one side. Each pile is then turned over once a day, if needed, until the rank heat is out of it. If it should get too dry the hose is turned on it and a good watering given. In the pile of short manure we put one part soil to four of manure and mix the whole together thoroughly, it being ready for the beds when the heat has declined to say 120°. It is better to have it a little too hot than too cold. In the bottom we put the long strawy manure, say one foot of it, making it as firm and solid as possible. On the top of this we put four to six inches of the finer manure, this like the rest being made quite firm. A thermometer is plunged in the bed, and when the heat declines to 95° the bed is ready for the spawn.

There are two kinds of spawn, namely English and French. The English is prepared in brick form, the French in flakes. We have tried them both, but have always been more successful with the English and it is this kind we would advise being used. In spawning a bed,

break the cake into about fifteen pieces, making holes with the hand about two inches deep and nine inches apart, then put your pieces of spawn in, filling up the holes again with the manure and beating it in. After the bed is spawned, cover the whole with a few inches of straw to retain the heat and moisture. In eight days the bed will be ready for casing.

By casing is meant putting two inches of soil over the entire bed; any kind of soil will answer. I have used all kinds but have never noted any difference in the result. Next put it through a half inch sieve, letting the soil be somewhat moist and spread it evenly over the bed an inch and a half or two inches deep. Beat the whole as firmly as possible with the back of a spade and the operation is finished. Cover the whole up with about six inches of straw from which the chaff has been taken out, as this keeps the bed clean. Salt hay is also good where it can be obtained. In about six weeks the covering should be removed as the mushrooms will then be beginning to show, though it may take them a trifle longer, it all depending upon how the heat was maintained in the bed.

The best way in which to grow mushrooms is in boxed beds, say four feet wide and twenty inches high and as long as is wanted. If they are grown where a furnace is used, it is well to have the bed boxed in as the dry heat of the cellar will have a bad effect on the beds. Again, if the beds are made in a cold cellar, where no artificial heat is used (and this is how we grow ours), and where the temperature goes below the freezing point, a heavy covering will have to be put over the bed to keep it warm.

Mushrooms like a temperature of about

50° to 55°, but a good crop can be gathered from a cellar in which the temperature is much less. Early in September is the time to begin, for then a crop can be gathered before very cold weather comes. Watering is a part of the work that has to be done carefully. At the end of six weeks, when the straw is removed from the beds, if they appear at all dry a good watering should be given, which should be at a temperature of about 90°. Use a watering pot and a fine sprinkler and water evenly over the bed.

In gathering the crop they should be taken out by the root by a twist of the hand. If they should break off do not leave the broken part in the bed, as it will rot and kill the live spawn that is running through the bed. Fill all holes with soil after any mushrooms have been gathered and make the same firm with the hand. After the first crop is gathered, if a light coating of soil is put over the bed and a watering given, a second and even third crop may be had. What I have found to be the most important point in mushroom growing is to have the manure quite moist before it is put in the bed, and if attention is paid to this I cannot see why any one should make a failure, providing good fresh spawn is used.

A good guide for amateurs' use is "Mushrooms—How to Grow Them," by William Falconer. This is a plainly written book, explaining the methods of culture and is well illustrated. But we may mention here, that the work is apparently far more difficult and complicated on paper than it proves to be in practice, as it can be accomplished by any one.

Mahwah, N. J.

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VEGETABLES IN WEST VIRGINIA.

Bulletin No. 49 of the West Virginia Agricultural Experiment Station at Morgantown, W. Va., is devoted to vegetables. Following is a summary of conclusions arrived at as the result of experiments at the station:

1. The same quantity of beans planted in drills will give almost if not quite double the product they will planted in hills.

2. The yield of Lima beans can be increased by planting the seed in inverted sods in a hotbed from April 1 to 10. Where but a few plants are grown for family use, the increase will more than repay the trouble.

3. Bush Lima beans yield well and can, I believe, be made to take the place of the pole sorts. If this is true, the cost of poles and training can be deducted from the cost of growing Lima beans.

4. The bush sorts of beans require less space for development than the pole varieties, and consequently a larger return per acre may be expected from bush Limas than from pole Limas, particularly towards the northern limit of the successful cultivation of the pole Limas.

5. It is believed that the limit of the successful cultivation of the bush Lima will be found to be much farther north than that of the pole Lima.

6. The test of the year shows a decided advantage in planting peas three inches deep, as against either deeper or shallower planting.

7. The tomatoes introduced in 1896 emphasize the great variability which this plant has acquired since it was brought under cultivation.

8. The fertilizer test on tomatoes indicates the value of a complete manure for this crop.

9. The fertilizer test clearly shows the superiority of potassic fertilizers among the special manures used and the advantage to be gained in the use of sulphate of potash over the muriate in fertilization of tomatoes.

10. The balance of evidence given in the test of seedlings vs. cuttings of tomato plants in outdoor culture favors the cuttings both in earliness and the total crop for the season. The fruits, however, are smaller than those of the seedling plants.

11. The one test of seedlings vs. cuttings in the house gives a verdict decidedly in favor of the seedling plants.

12. The more care given young tomato plants, previous to planting in the garden, the larger the yield.

13. Treating young tomato plants, according to the best approved methods, before planting in the field, increases the yield sufficiently to more than pay the cost of the extra equipment and labor.

14. Training tomato plants to a single stem hastens the maturity of the fruits and somewhat increases their size.

15. Tomato plants trained in racks gave a larger yield than those trained by any other method.

16. The date of seed sowing that gave the largest yield of fruit was March 2.

17. The use of a straw mulch under tomato plants reduced the rot nearly one-half.

18. Pruning tomato plants after the crop was set hastened the maturity of the fruits, but slightly decreased the season's crop.

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PLANTING PEACH TREES.

In the northern states peach trees are better set in spring than fall, as newly planted ones seem to suffer from the freezings of winter. This applies more to one-year than to two-year or older ones. But in the north when plantings are made early even one-year plants do fairly well, especially if well pruned, as they should be, and mulched. In the south the planting is carried on successfully from late fall till early spring, whenever the ground is open.

There is no loss and much gain in giving the trees a close pruning when planted. A one-year-old tree should be cut in almost to the main shoot, and this one should be shortened in unless trees highly branched are required. In many of the peach orchards of Delaware the trees when set were cut back to within two feet of the ground. This gives bush-shaped trees, which it is claimed do better there than standards. In amateurs' gardens it is usually preferred that trees be pruned to branch at from three to four feet from the ground, so the topping of young trees should be at four feet.

Peach trees require soil of good quality, it being useless to look for success from them in poor soil. Especially should this be seen to for young trees, for unless a young tree starts off well the first year or two it is of but little use thereafter.

There is a great deal of pleasure in the raising of seedling peaches. Hardly any fruit varies more than peach seedlings, and usually every one so raised is worthy of being given a place in a garden. The trouble is that we cannot tell what we are going to get when we sow the stones, whether late, early or what. Were it not for this one could do almost as well setting out seedlings as those of named sorts. But as named ones give us not only a choice of kinds to ripen at the time required, but also a choice of quality, for there is a great difference in this respect, these sorts will always be the principal ones planted.

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WITCH GRASS IN THE LAWN.

I would like advice in regard to witch grass. Have plowed my lawn once on its account and this fall it is as bad as ever. Beverly, Mass. M. M. M.

It is hardly possible for you to get rid of the grass unless you were to give up your lawn. It can only be exterminated by plowing up the grass as you did, harrowing thoroughly, and then grow some crop that will require constant cultivation, so that there will be no chance for the grass to make growth. It would take perhaps two years to rid the ground of it, but there is no other way, as every bit of root, no matter how small, will produce a shoot in spring.

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The South street entrance, which is shown in our illustration, was the first to be constructed and on the avenues leading from this entrance, one of which we also illustrate, the growth is more advanced than in the newer portions.

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SHRUB OAKS.

In the minds of every one the oak is so associated with the idea of a large tree that it is a great surprise to many to be told there are dwarf shrub-like oaks. Three of our northern oaks are of this

class, viz.: *Quercus ilicifolia*, *prinoides* and a variety of *nigra*.

Botanical works give three to four feet as the height to which *ilicifolia* and *prinoides* attain, but though they can be found in apparent perfection when but two feet high, I have seen them at times eight to ten feet, but from four to six would represent the size usually met with. Those who have never seen these low growing bushes are surprised to see such little oaks loaded with acorns. I was greatly surprised myself two years ago, when botanizing in southern New Jersey, to come on a large woods of the *Quercus nigra*, the black oak, and to find in it little fellows but two feet high full of acorns. It was an acorn year, and there were all sizes of trees, from the little shrub forms of two feet to those of forty feet, and all were bearing acorns. I have found no mention in any work of a tendency in this oak to apparently become mature at such an early age and so small a size. In Pennsylvania this oak grows to about thirty to forty feet, and makes a round-

headed tree, much as the English oak does. It is famous for its large, massy foliage; and should it be that the dwarf forms met with would reproduce themselves from seed, specimens of these handsome leaved oaks, in bush size, though tree shape, as they would be, would be most ornamental on a lawn. The two others mentioned, *ilicifolia* and *prinoides*, have quite small leaves, not like the *nigra* at all.

In southern Europe these dwarf oaks, especially *ilicifolia*, are much used for game covers. The acorns are sown in beds and the seedlings transplanted when

the advent of the Japanese privet, as the beauty of a hedge of this plant and the ease with which it is managed, as well as its adaptability to so many positions, make it a universal favorite. In fact it is not as a hedge plant, in the old-time meaning of the word, that it is so much used. Hedges were, and are yet, to keep out intruders. This privet is used as much to form an ornamental dividing line or a screen as for a hedge. Indeed, as it lacks thorns, it would be useless for hedging where a determined person was bent on getting through it.

It is, no doubt, because of its great use

length, the shears will be required, and this time the shaping of the plants should be commenced. Cut the ends of the side shoots in such a way that the lower ones extend the farthest. Flat sided hedges succeed fairly well but those flourish the best that are much narrower at the top than at the base. The top shoots may also be shortened a little. The shape having been given the remaining work for the season is to keep a neat looking hedge by repeated prunings. There is no set time for it. The oftener it is done, the thicker the hedge.

Farmers are content to prune their Osage orange and honey locust hedges twice a year. They think it does not pay them to consider neatness, and so a trimming in June and another in September suffices. In this section the close of August usually sees the last pruning of the season given to this and other deciduous hedges. A slight growth succeeds, just enough to take off the stiffness a freshly pruned hedge presents. While many shrubs and other plants used for hedges and division lines will bear considerable cutting back, to thicken them, none will bear it so well as the privet, and the habit of the plant must be studied before the application of the knife.

The principles of pruning are very much the same for evergreens as for deciduous shrubs, excepting that they will not bear the close cutting back recommended for the others. An evergreen cut back beyond its leaves is very reluctant to break afresh. On the other hand, their habit is towards bushiness, and a little pruning of the ends about twice during the season is sufficient. The American arbor-vita, hemlock and Norway spruce are the three mostly used for hedging, partly because of their cheapness as well as their utility. When the hedge is of about full growth and as bushy as desired many are satisfied with but one pruning a year, and this about the time growth in length is nearly completed, in July.

But evergreen hedges, to look well, should receive two cuttings, one towards the time of completion of growth, the other in late summer; to cut away late, straggling growths, which are often made, and to give a neat even surface to the hedge. Any time in late summer does for the last one, excepting that it must not be later than two months before freezing weather sets in. Pruning exposes inner growth, and this wants hardening up before winter comes.

Philadelphia. JOSEPH MEEHAN.



SCENE ON HEMLOCK HILL. ARNOLD ARBORETUM, BOSTON.

two years old. Low thickets are thus formed which serve the purpose intended admirably. *Ilcifolia* is used more than the other, but this is partly because *prinoides* belongs to a section the acorns of which will not keep fresh very long after falling, requiring to be placed in earth within a few weeks after dropping from the tree. *Ilcifolia* and *nigra* on the other hand, may be placed in a cool, moist cellar and will be perfectly good for sowing in the spring.

Philadelphia. JOSEPH MEEHAN.

PRUNING HEDGES.

Frequent inquiries from friends and correspondents as to how hedges should be trimmed seem to call for some general remarks on the subject. Hedges are far more popular now than they were before

that so many inquiries concerning it are received. As what applies to this plant does also to most all other deciduous ones, I will speak of the proper treatment of this particular one at this time.

Should the plants have been set last fall or spring they should have been cut down to within two to three inches of the ground in the spring. This is that many shoots may take the place of one, to form a bushy base. Then the shoots which would have sprung up should have been cut off when about six inches in length again to make bushiness. This is all the work required for the first season. Some time before the following spring the top should be cut back to very near the point at which they were last cut, the whole effort being to get the base bushy.

After the new growth has progressed that the shoots are six inches or so in

HYPERICUMS. ST. JOHN'S WORT.

The various species of hypericum are very useful, for they do much to brighten the appearance of a shrubbery in midsummer, a period in which but few shrubs are in bloom. Some are of almost creeping habit, such as the *calycinum*; others, as *Kalmianum*, are perfect shrubs.

Kalmianum is one of the best of the shrub growing kinds. All the species have yellow flowers. *Kalmianum* has them of fair size, and with the deep yellow petals is a bunch of fuzzy stamens of the same color, or nearly so, adding to the mass of color. This species, though of shrub-like growth, makes but a small sized shrub, two to three feet in height.

Another one, native, like the last, is *prolificum*. This is of more slender growth than the preceding, yet the bunches are strong and stiff, and there are so many of them that a bushy looking shrub results. The flowers are not as large as those of *Kalmianum*, but there are many more of them, and it is alto-



SOUTH STREET GATE. ARNOLD ARBORETUM, BOSTON.

gether a good kind. There is a popular variety of this one called *densiflorum*, with numerous branches and flowers, which makes a good display during July and August.

Patulum is a Japanese species, which with us is of a half shrubby nature. This may be natural to it, or the effect of our climate, at any rate, its tops are partly winter-killed every year. Like the rest, it blooms prettily at the midsummer season its flowers being of medium size.

Calycinum has something of a prostrate habit of growth, but this I attribute to its tops getting winter-killed, as in its native home, Southern Europe, it becomes a fair sized shrub. A good place for it here is in a situation partially shaded, and where something partly spreading is required. It is very nearly evergreen, and its large yellow flowers are much admired.

Moserianum is one of the showiest of all, because of its very large flowers. These flowers are really no larger than those of *calycinum*, but the petals are so broad that they touch one another, while in the case of *calycinum* they are narrow, not touching, and so give the impression of measuring less. *Moserianum* behaves much as *patulum* does in winter. Its tops are a little cut at that time, or die back naturally, so that it remains always as a half shrubby plant. It makes a good display, and keeps it up for a long time, and among those of dwarf growth, is one of the best.

Aureum, another one with very large yellow flowers, used to be in collections here, but seems to have disappeared, whether from lack of hardiness or not I cannot say.

A Siberian species, *Ascyron*, has large flowers, but somehow, though hardy enough, it does not seem to make as

pretty a shrub as some others, nor does it please as well.

There are many other sorts in cultivation in Europe, and no doubt many of them would be useful here. One of them, *Androsæmum*, the common "Tutsan" of England, has proved hardy in this city. Philadelphia. JOSEPH MEEHAN.

The Flower Garden.

HERBACEOUS PLANT NOTES.

How can I fill several beds with blue and white or purple and white flowered hardy plants and have them look well both summer and fall? is a question asked in a letter which comes from Zanesville, O. Following I give a few examples:

All varieties of *Viola cornuta* are continuous bloomers during the summer and fall months. The flowers show well above the dense foliage and are produced very freely, but they should not be planted in a very dry place nor where they are exposed all day to the full sun; they will do their best when slightly shaded during the hottest part of the day by near-by high trees or otherwise; dense shade is not advisable, causing a lanky growth, especially where the ground is inclined to be moist. In the more humid climate of European countries the horned violet is extensively used in carpet and ribbon beds. No shade is required there and failures are seldom heard of, but with us the plants make a poor showing when exposed to the July and August sun, though early in the season and again in September or later their flowering is as free as anywhere. Where a suitable place can be provided for them few plants

will equal this violet for constant and profuse blooming. Low and compact in growth, they are admirably suited for small beds and narrow borders.

A light and rich soil, such as we would provide for a pansy bed, is best for them and they have a preference for a cool underground. In dry weather frequent waterings will be of great benefit to the plants; this will keep them growing freely and the flowers will show the extra care in size and substance. They are increased readily by division; a clump one year old can be divided into a great many pieces; each one will have sufficient roots to support the new plant and they grow as rapidly as young pansy plants. Ordinarily it is best to plant the bed in the fall months and get them well established in their permanent quarters before winter sets in, but where nice young plants are available transplanting may be delayed until spring with equal success. Fall divided plants, wintered in a pansy frame and potted up in April, make fine stock for spring without the aid of fireheat; they can be grown cheaply along with the pansies. Plenty of air must be allowed at all times and the sash removed on every mild day or the plants are apt to draw. A very light frame, fully exposed to the sun is required for a compact growth. The spring sun is not strong enough to hurt any of the plants, as long as they are well supplied with water. Under such treatment we can be sure of short jointed and well bloomed plants, ready to be set out as soon as the ground is in the right condition.

The varieties of *Campanula carpathica* flower for a longer period than any of the others. The plants increase and spread out constantly from spring until late in fall and the younger growth is always full of bloom as long as the weather is

favorable. Beginning to bloom in June, it lasts until October generally, covering the ground with a dense cushion-like mass of foliage at all times. The flower stems form a very loose panicle and seldom grow taller than 10 inches. The bells stand erect on thin wiry peduncles; various shades of blue and pure white are represented among them. I know of no other campanula which is so clean looking throughout the season; but very little attention is required, the old stems soon dry up and falling over are hidden from view among the many leaves. Good rich garden soil will grow this plant to perfection. When very dry weather sets in, an occasional watering should be applied, else the plants might stop growing and blooming.

Dividing every second year is advisable unless the plants have been allowed plenty of room when first set out and are not crowding each other. Either fall or spring will do for this operation, no difficulty being experienced in keeping the young plants alive if we only treat them half way decent. Fully exposed to the sun their growth is usually more dwarf and compact, while a little shade part of the day will tend to elongate the flower stems, but otherwise does not hurt their blooming qualities, providing, however, that the soil is not too poor and dry. We may plant these campanulas wherever we like, in the border or in a bed by themselves; they are highly satisfactory in any position and look well throughout the season.

The deep purplish blue *Aster Mme. Soymer* and the white *A. ptarmicoides* grow to about the same height (18 inches) and will produce a good effect from the latter part of August until October; or the lighter colored *A. amellus bessarabicus* may be substituted for *Mme. Soymer*. *A. ptarmicoides* is a very profuse bloomer and lasts exceedingly well; the flowers are pure white and small but there are hundreds of them on the stems. *Mme. Soymer* is one of the best dwarf sorts, of good color and very floriferous, grows very compact and continues in good shape until severe frost. It is not very often found in collections, but will surely come to the front when its many good qualities are better known. *A. amellus bessarabicus* is everywhere considered one of the best in the family. The flowers are large and well shaped, of a pleasing shade of purple and the habit of the whole plant is neat and erect. It blooms abundantly and lasts as long as the others. None of these asters show any bareness of stem near the ground as many of our native asters do; they are branchy and fully furnished right from the base up, neither have they a loose or straggling appearance in any stage of their growth.

The ever blooming double white *Lychnis vespertina fl. pl.* has been mentioned in these columns some time ago. Its flowers are large and as full as carnations, but are of no value for cutting because they drop too easy. It is irregular and loose in growth and habit, but nevertheless a first-class plant for a bed or border. Combined with the light blue *Salvia farinacea* a fine show can be maintained throughout the summer and fall months. Where *S. farinacea* is not quite hardy the darker colored *Salvia pratensis* might be used instead, but the latter does not flower so profusely and continuously as the first, though there is always some bloom up to the end of September at least.

None of the above plants are fastidious about soil and do well in open sun or in

slightly shaded places; all are increased readily by division in fall or spring. They only require watering when the ground is very dry and anybody can manage them without any difficulty.

J. B. KELLER.

OUR GARDEN TODAY.

Our garden today, the 15th of September, still has a fine floral display, and the June sown annuals will keep the garden gay till frost pays us a visit. The garden never looked better at this season than it does this year. Our sandy soil needs abundance of rain and this summer we have had plenty of it.

Among the most conspicuous plants in bloom *Clematis paniculata* takes the lead. Too much praise cannot be given this vine. We have it growing over the roof of the thatched cottage in the garden and a beautiful sight it is. Again we have it covering old walls and dead trees, over arbors, and planted along the picket fence which encloses the cottage garden, and we think no vine could be used with better effect than this rapid growing, free flowering clematis. It is easy to grow, in fact we give it no attention. It is quite hardy although it sometimes gets killed back a little on the roof of the thatched cottage, where it is exposed to the full sweep of the cold west winds. It is an excellent vine for amateurs as it needs so little attention.

The dahlias are now a mass of flowers and are the best we have ever seen, no doubt due to the wet cool season we have had.

The new branching asters are a valuable addition to this late blooming class of plants and are the best asters we have. They grow two to three feet high and are extremely free flowering, and every bloom is perfect. The stems are long and for cutting purposes nothing could be better. This is the only kind of aster we will grow in the future, as with us they are far superior to the other strains of asters we have, and we have many.

The miniature sunflower (*Helianthus cucumerifolius*) is the showiest yellow flower we have for fall decoration. Masses of this sunflower are very effective. It forms a tree like bush and from July till frost it is always laden with a wealth of flowers. It is easily raised from seed and no garden however small should be without it.

The dwarf and tall French marigolds did not flower much through August, the wet weather causing them to go all to growth, but now they are making up for it, as one could not wish them to flower better than they are doing now. The African sorts, like the French, are flowering splendidly, and showy plants they are when a good strain of them is had.

The zinnias have been in flower since June and today appear just as good as they ever were. For massing they are very useful as we do not have many annuals that last the whole season as the zinnias do. Ageratums, blue and white, have flowered all summer long. For an edging plant that will last the season out it would be hard to find a more suitable plant as they are always a mass of flowers.

The California mimulus (*M. cardinalis*) has done extremely well this season and its pretty scarlet flowers are still plentiful. It is easily raised from seed, which should be sown early, say in February, to have it do its best. It can also be raised from cuttings, and we have a lot propagated in this way. These we will winter over

in a frost proof frame, as they are not hardy. *Torenia Fournieri*, *T. Bailloni* and *T. White Wings* are elegant free flowering plants and last the most of the season. They like a partly shady place to grow in and make a nice edging plant if planted thickly. They also make nice pot plants for the decoration of the greenhouse in summer.

In the bulb beds dwarf nasturtiums are giving us plenty of their dainty flowers. We cannot grow a great variety of plants in such a place it is so dry, but these nasturtiums seem to flower better here than in any place in the garden. The same can be said of the portulacca, both plants doing better in beds that are raised a few inches above the level. The annual lupinus makes a nice plant for the mixed border. They flower freely and their long spikes of pea-shaped flowers are very pretty; they last a long time in flower. The Marguerite carnations are now past their best, although they are quite good yet and give us some very good flowers for cutting.

The hardy asters in great variety are now in fine shape. Too much cannot be said of these simple and easily grown plants. For naturalizing purposes in shady parts of the garden nothing could be better. They will grow most anywhere, in shade or open, or under trees where scarcely anything else will grow, but the choicer varieties should find a place in the perennial border, as they are well worthy of it. They are all easily raised from seed. At this season, when they are in flower, if a day is taken among them in their native wilds it will astonish you to see how many different varieties you can get together in a short time. They make fine cut flowers for large vases and are the last of the flowers to leave the garden as a light frost won't hurt them.

Another showy plant, and one we grow a great many of, is the goldenrod (solidago). This, like the asters, can be naturalized in shady parts, and if a few varieties are grown they are very showy indeed. To associate with the asters, either as plants or in cut flower work, nothing could be better.

The Japanese anemones are now at their best and will last till frost. They are beautiful flowers, especially the white one. They seem to do best in partial shade in well drained soil. They increase very fast and are easily raised from seed.

Rudbeckia speciosa has been in flower nearly all summer and a pretty flower it is. It is as hardy as a rock. We use it largely in the borders as its free-flowering nature and showy appearance makes it indispensable as a border plant. It should find a place in all perennial borders.

The tall blue and white spikes of the chimney bell flower (*Campanula pyramidalis*) are quite conspicuous in the garden. This is the tallest of all the bell flowers and a noble plant it is. It lasts in perfection a long time. We have some of the spikes over six feet high. It is easily raised from seed and proves quite hardy, but I like to winter the young plants in a cold-frame as sometimes they will not otherwise flower the second year, unless the seeds are sown early in spring.

The second crop of flowers from the delphiniums are now making quite a show. Although the spikes are not so large as the first ones were they come in quite handy for cutting as there is always a scarcity of blue flowers at this season of the year. *Sedum spectabile* from seed last year is now in good flower. It is only about ten inches high and is very nice. The old plants are just passing out of bloom. This plant is easily raised



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AVENUE TO SOUTH STREET GATE. ARNOLD ARBORETUM, BOSTON.

from seed and a stock of it is soon worked up in this way.

Helianthus orgyalis in bold masses is very conspicuous. This grows eight to ten feet high and is exceedingly graceful and beautiful. *H. maximus* grows about six feet high, has very large flowers and is very striking. *H. multiflorus fl. pl.* is now past its best. This is the best for cutting and it lasts a long time in water. *H. maximiliana* is just beginning to flower. It grows about six feet high and the flowers are quite large. All these late flowering sunflowers are very showy, but some of them are rather rough for the perennial border; still, planted among the shrubbery where they are protected from the high winds they do nicely, and as the most of the shrubs are flowerless at this season they help to keep that part of the garden gay.

Verbena venosa has been in flower all summer long, and will last till frost. This is a nice plant for the borders or beds, and is much used in England for bedding purposes. It seems to do just as well here. We will have a few beds of it another year, so well do we like it; the flowers are blue.

In *Pyrethrum uliginosum* we have the finest autumn flowering plant one could have. It grows about five feet high, bearing innumerable large, single, white flowers with yellow centers, resembling the daisies but much larger. The flowers are well adapted for cutting, the plant lasts a long time in perfection, and is indispensable in all collections of hardy plants. Another plant which blooms at the same time is *Helenium autumnale superbum*. This is a fit companion to the last named. For some time it has been a mass of flowers, which are yellow. It also grows five feet high. If anyone wishes a big display

of flowers in the fall months, by all means get these two plants; both are very hardy and increase fast.

These are but a few of the flowers we have in bloom. We could mention many more, such as the cannas, salvias, *speciosum* lilies, begonias, petunias, cornflowers, scabiosas, four o'clocks, violas, antirrhinums, penstemons, tea and hybrid tea roses, and many others. We are now thinking of another year and getting many new lilies planted, and if all of our pets do as well next summer as they have this year, we will indeed be well pleased.

DAVID FRASER.

Mahwah, N. J.

PLAN FOR GARDEN OF HARDY PLANTS.

It would be of interest to the writer and perhaps of general interest to your subscribers if you would publish a planting scheme for an old fashioned garden. Plot it say for 50 by 50 feet and indicate the grouping of the plants as well as giving a full list of names, introducing only hardy plants,
Long Island.

H. F. N.

The dimensions of the plot as given by H. F. N. (50x50 feet) do not exactly suit my taste if a regular herbaceous garden is wanted. The ideal place for the latter would be along a shrubbery, hedge or fence covered with vines to serve as a back ground, and a longer strip of land, say 25x100 or 20x125 feet would surely be more satisfactory in many respects than this square plot, but on a small sized country place it is not always possible to have everything according to our own ideas. In the herbaceous garden of today straight lines and regularity are

avoided as much as possible, while in a so-called old fashioned flower garden we may see circles or half circles cut up by narrow straight paths and a similarity of beds are looked upon as desirable rather than otherwise.

It is an easy matter to lay out a design for such; as an example I will suggest the following. Find the exact center of the plot and draw a circle 14 feet in diameter; this will form a fair sized center bed which will not be cut up by any paths; 2½ feet from the edge of this circle draw another one; the space between these two lines forms a walk around the middle bed. The next circle to be drawn is 4 feet from the former and another again 2½ feet outside of this for another walk. The band or strip 4 feet wide is to be divided into four beds of equal lengths by walks leading to the inside circle; either one or several of these four walks may be continued to the outside limit of the plot and thus form an entrance to the ground. We have now a center bed 14 feet in diameter, four curving beds around it, 4 feet wide each and about 20 feet long on their longest side, and a large border all around the sides ranging from 9 feet wide in its narrowest parts to twice that width in the corners, which together with the two circular walks 2½ feet wide each is just the 50 feet either way. All the paths should be excavated 6 or 8 inches and then gravelled; the soil removed from the walks may go on the beds or the border.

The beds must now be spaded over digging in a liberal quantity of well decayed manure for we have to consider that the plants to be set out are to remain in here for some years without disturbance and most of them are gross feeders. Begin in the center of the middle

bed by planting three generous clumps of *Helianthus orgyalis*, around these eight or ten roots of *Aster Robt. Parker*, followed by a circle of eighteen *Hibiscus Moscheutos*. The next row is made up of twenty-five *Lychnis chalcedonica* or the same number of *Aquilegia canadensis*, thirty-six *Wahlenbergia grandiflora* will come after that, and the last or outer row of the circle is composed of forty-five or fifty plants of *Alyssum saxatile compactum*. One of the four long narrow beds could be planted with blue and white *Campanula carpathica* edged with *Aubretia deltoidea*, forty-five of the former and about the same number of the latter will be required; intermixed between the campanulas a few *Gladiolus communis* could be planted.

A second bed may be edged with *Armeria maritima*, the body of the bed to be filled with *Saponaria caucasica fl. pl.* and a few *Iris acorus var.* interspersed among them. For another take *Lychnis viscaria pl.* with here and there a few montbretias, surrounded by *Arabis albidula*; and the last bed could be filled with *Cenothera glauca* mixed with *Lilium speciosum* and an edging of *Iberis correaefolia*. Each of these beds will require about the same number of plants as the first one. It would be an advantage to have a hedge of some sort surrounding the plat, or a light wire fence would answer the same purpose; over the wires we could train vines, such as *Clematis paniculata* and *C. virginiana*, *Lathyrus latifolius*, *Apios tuberosa*, callistegias or similar hardy climbers. In the four corners of the plat several varieties of eulalias and a clump of *Arundo donax var.* can find a place; three eulalias for each corner will be enough if the plants are strong; they should be planted 2½ to 3 feet apart.

Next to one of these, on the right side, we may introduce in a double row I, 8 *Bocconia cordata* planted two feet apart and then patch II, 8 *Boltonia asteroides* planted the same distance apart in a double row; then further still to the right III, the same number of *Helianthus multiflorus fl. pl.* would reach to the middle of the hedge or fence on one side. Then we begin on the left of the eulalias and go the same distance IV, with 8 *Cephalaria tartarica*; V, 8 *Coreopsis tripteris*, and VI, 8 *Hibiscus militaris* and we have formed a background for just one quarter of the border. Now take for patch VII, 12 *Rudbeckia laciniata* Golden Glow and fill out the corner where eulalias, bocconias and cephalarias were planted; they will reach over to the boltonias on the one and to the coreopsis on the other side; VIII, in front of the boltonias, 6 *Dicentra spectabilis* are to go in a double row again and IX, 10 *Delphinium formosum* with the *Helianthus multiflorus* back of them. Patch X is in front of *Coreopsis tripteris*, 8 oriental poppies are planted there, and the next plat, XI, is composed of 8 clumps of *Monarda didyma*. XII will occupy the corner formed by dicentra and poppies; it is filled with 10 *Aconitum autumnale*; 10 *Gaillardia grandiflora superba* in XIII which is in front of the delphiniums; XIV, with 10 *Spiraea filipendula* reaches half way across the aconitum patch; the other half is XV, planted with 10 *Polygonum cuspidatum*, leaving just room enough for XVI, where 10 *Heimerocallis flava* may find a home, and then one quarter of the whole border is planted excepting a narrow strip along the path which may be edged with white and pink *Phlox subulata*.

For the remaining three corners I will mention the plants now, to be planted in

the same order as the first, beginning with the patch I, at the right side of the eulalias, tall native asters; II, *Thalictrum aquilegifolium*; III, *Spiraea lobata*; IV, *Helianthus laetiflorus*; V, *Delphinium hybridum*; VI, *Rudbeckia hirta*; VII, hollyhocks; VIII, white *Phlox decussata*; IX, *Coreopsis lanceolata*; X, *Lythrum salicaria*; XI, *Centaurea montana alba*; XII, *Anemone japonica alba*; XIII, *Polemonium coeruleum*; XIV, *Centranthus ruber*; XV, *Veronica spicata alba*; XVI, *Silene Schafta*, and for edging use *Saponaria ocymoides*. The second quarter is finished, now for the third: I, *Boltonia latisquama*; II, *Helenium autumnale*; III, *Pæonia sinensis* and *Lilium excelsum*; IV, *Inula macrocephala*; V, tall bright colored *Phlox decussata*; VI, *Eryngium amethystinum*; VII, *Aquilegia chrysantha*; VIII, *Spiraea ulmaria pl.*; IX, *Phlox suffruticosa*; X, *Pentstemon pubescens*; XI, *Digitalis gloxiniaeflora*; XII, *Rudbeckia maxima*; XIII, *Dicentra spectabilis alba*; XIV, *Eriogon speciosus*; XV, *Pæonia tenuifolia*, single or double; XVI, *Pyrethrum roseum* and an edging of *Dianthus cæsius*.

The 1st quarter remains and can be planted in the following manner: I, *Cassia marylandica*; II, *Spiraea palmata elegans*; III, *Iris Kæmpferii*; IV, *Pyrethrum uliginosum*; V, *Inula glandulosa*; VI, *Aconitum californicum*; VII, *Clematis recta*; VIII, *Helenium Hoopesii*; IX, *Pæonia officinalis* and *Lilium auratum*; X, *Campanula persicifolia cœrulea*; XI, *Chrysosoma linosyris*; XII, *Cimicifuga racemosa*; XIII, *Aster amellus bessarabicus*; XIV, *Papaver nudicaule*, yellow; XV, *Campanula Van Houttei*; XVI, *Iris germanica*, and an edging of *Plumbago larpenæ*. Box edging may be used for all or part of the beds if so desired but dwarf flowering plants will usually give better satisfaction.

Thus planted we would have flowers in this garden from early spring until late in the fall; early and late flowering species are so placed that no large patches bare of flowers could be noticed at any time during the season; early and late bloomers are evenly distributed on the ground, and if the decaying flowers and foliage are removed once in awhile, the place would always be neat, cheerful and attractive.

J. B. K.

CLEMATIS PANICULATA WITH SPOTTED LEAVES.

What is the cause of and cure for the brown spot appearing on the leaves of a *Clematis paniculata*? See enclosed leaf. The vine is a young one planted this spring and has made but a couple of leaves of growth. The spot is on the lower leaves.

S. H. C.

Mass.

The clematis leaf, placed under a lens, indicates a fungous attack. It is either that or the work of some insect, and it does not appear to be the latter. We advise you to try spraying with Bordeaux mixture for all forms of fungi. Even should the injury be the work of insects, the spraying will be more beneficial than injurious.

PERENNIAL PHLOXES FROM SEED.

Does the raising of perennial phlox from seed present any special difficulties? Two plantings have failed completely though some seventy other varieties of flower seeds treated in the same way were successful. The phlox fails to germinate.

S. H. C.

Mass.

Perennial phlox seed sown in the fall, late in the season, will come up freely in the spring, as witness the hundreds of seedlings which come up in old beds of plants allowed to perfect their seeds. If kept till spring, place the seed in a cool place, mixed with almost dry soil, sowing it the first chance that occurs.

The Cold-Frame.

THE GOLD FRAMES.

These should now be put in working order, and all plants should be planted by the 15th of October; in fact we like to have them all planted by the end of September. We are now busy at this work as we have a long string of frames to fill. We will tell you now what we are putting in them.

The forget-me-nots we grow largely as we like to have a good spring show and they are nice to associate with the spring flowering bulbs. If a few had been sown early and are now good sized plants they will bloom nicely in the frames, or they can be lifted in January or February and potted. They make fine plants for the window or cool greenhouse in the early spring months.

Canterbury bells sown in July and transplanted once are now nice stocky plants, and were planted to-day, the 16th. We plant them about eight inches apart as they grow quite fast and are liable to rot if planted too close together. A few degrees of frost won't hurt them.

Polyanthuses and hardy primroses in variety take up quite a space. These are from June sowings and fine stocky plants they are now. They are quite hardy with us, but this year's seedlings might not flower next spring if they were planted out now, and by keeping them growing all winter most every one will flower. In this way we have them the second year in perfection. We will winter over a few thousand of them in this way, as we wish to naturalize the most of them in the grass and shady spots around the garden. Masses of them were last spring the showiest things we had, and they last a long time in bloom.

Foxgloves we grow from seed each year and winter in a frame as they do not winter very well with us if left outside. When they are past flowering they are rooted out, and zinnias or similar plants take their place; this keeps the garden bright and no flowerless beds or borders are seen.

Pansies we do not grow much in the frames except a few for early flowers and these are left in the frames till they are past. We have better success with them when we plant them out where they are to flower in spring. They are quite hardy and we have just finished planting out many hundreds of them.

Carnations and pinks from cuttings are now planted out in the frames. These two are quite hardy but they bloom better for having the protection of a frame, and then they are safe from the rabbits, which are a great pest on this place.

The English daisies are fine for spring work, and we have just planted six hundred in the frames for this purpose. Though a common plant it is one of the showiest we have when in flower, and they last so long. They can be planted out just as soon as the soil is dry enough to work. The past spring they were in fine flower April 12 and lasted all through June, and I think gave more pleasure than some of the choice bulbs we had in flower at the same time.



VIEW IN THE CONSERVATORY OF MR. H. H. HUNNEWELL, WELLESLEY, MASS.

Violets in variety are grown largely. To have them all winter the frames must be kept snug and warm and no frost allowed to get at them. If grown only for spring flowers a light frost won't hurt them, but if it can be kept out so much the better.

The Christmas roses, although quite hardy, do better in a deep frame, as the flowers are then clean and can be used for cutting. If left outside they are always dirty and there is not much beauty about them. They should be planted in a frame and left there from year to year, a partly shady spot being selected for them.

Much room in the frames is given to hardy perennial plants that are too small to plant out, such as the choice delphiniums, linarias, *Verbena venosa* and many others. Then we have the tender bulbs such as the calochortus, brodiaeas, ixias, Bride gladiolus, freesias, anemones and such plants which need a frame. But these will not be planted till late. We have one frame that is full of these bulbs, being left there all summer, but plenty of air was given by tilting the sash at the back and keeping all rains from them after they had died down, and we expect them to come out all right. Don't coddle your plants in the frames, give plenty of air at all times; this will cause them to be hardier and stockier and more able to stand the cold winter that is before them. Keep the ground around the plants well stirred and give water when needed, which will not be often through the win-

ter months, but now, and in early spring, they will take plenty of it.

Mahwah, N. J.

DAVID FRASER.

The Greenhouse.

CONSERVATORY OF MR. H. H. HUNNEWELL.

The accompanying engraving shows a portion of the conservatory of Mr. H. H. Hunnewell, Wellesley, Mass., whose blooming rhododendrons and Italian garden we have already illustrated. The fine display of orchids and stately palms and other decorative plants are well shown in the engraving. Mr. Hunnewell is catholic in his tastes and there is no phase of gardening in which he does not take pleasure. In addition to the conservatories there are several houses devoted to fruits, including peaches and nectarines.

In Nicholson's Dictionary of Gardening the height of *Cyperus alternifolius* (sometimes called "Umbrella plant") is given as one to two and one-half feet, but in the conservatory of Mr. W. H. Chadwick, Chicago, is a specimen nine feet tall, and another one near by is eight feet in height. Both are planted out in a solid border in a collection of palms and similar plants. When seen at a little distance the writer thought the plant must be *Papyrus antiquorum* but inspection

showed that it was certainly the first named. Mr. Chadwick has now in fine bloom a plant of the 'Goose flower' (*Aristolochia gigas Sturtevantii*). The "goose" form is most noticeable before the flowers are fully open. On this plant there are dozens of buds in various stages of development and the display of "geese" and "goslings" is always of interest to visitors.

The Fruit Garden.

TROUBLE WITH THE QUINCE.

In regard to the quince—what causes the drying up of some of the fruit early in the season? A portion falls and the remainder upon the tree becomes hard as wood. What is the cause of the brown spot of varying size which appears around or at one side of the bud end of the fruit, extending to the core? What causes the fruit to crack, the break starting at the bud end and often extending to the stem and in to the core? What causes bunches of leaves to die, I think near the dried fruit first mentioned, while the balance of the tree remains fresh and healthy? What is the remedy for each of the above defects?

Mass.

SYLVANUS H. COBB.

The injury to the quince is the work of a fungus, and is prevented by spraying

the bushes with Bordeaux mixture several times during the season, commencing as soon as the leaves are fully developed. Both fruit and leaves are affected by it. It is very similar to the fungus which disfigures the foliage of pear trees, and causes the cracking of the fruit.

DOWNING MULBERRY.

Of the many mulberries in cultivation the Downing's Everbearing is the best of all that I know. The European, Russian

PRUNING PEAR TREES.

Where a pear tree, pruned last winter, has thrown up a great many suckery, non-bearing twigs, closely placed between the cut and the main wood, how should they be treated on this winter's pruning? Mass. S. H. C.

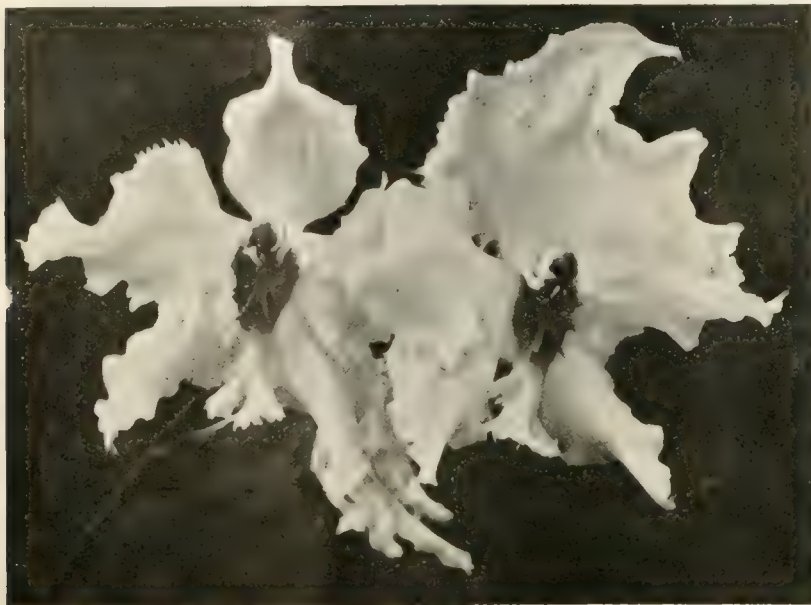
You speak of the pear shoots as non-bearing ones. There are no such shoots. If above the graft, all will bear in time. If too close together, cut some out. Those left may be pruned or not as the

Orchids.

ODONTOGLOSSUM CRISPUM.

This odontoglossum has been aptly described as the "Queen of Orchids" by one who has done more for orchid culture than perhaps any other man, and while it may be taken exception to by some, if applied literally, it certainly does not overpraise this beautiful species. Fickleness is not usually regarded a virtue, but the term might almost be applied to this fine old orchid in that no two have yet been imported that were alike. The spotting on the flowers varies on each individual bloom on the spike, and some varieties that come pure white one year will be spotted the next year, but all these uncertainties add to the interest to the cultivator, especially if his plants be newly imported from the woods in which they grow. The specimen flowers illustrated are from a plant that has invariably proven pure white, and while this is not a rare occurrence it adds to the value of the plant considerably.

Odontoglossum crispum is from the Andes of South America and requires the coolest possible treatment under cultivation in summer. A house with a north exposure, such as one devoted to propagating in winter and ferns in summer, would grow them well with plenty of air and moisture nearing the saturation point, with a temperature in winter of about 50°, for as the growth is mostly made in winter they must be kept moving, and the crop of flowers is produced in spring and early summer. E. O. O.



ODONTOGLOSSUM CRISPUM, ALBINO VARIETY.

and Japanese seem very much alike both in their fruit and botanical characters. Their fruit is far too sweet for most tastes. In many lists the Downing's Everbearing is classed as a variety of the European, but this is certainly a mistake. It is, evidently, a variety of our native *rubra*, having the same large, coarse leaves, strong growth and large fruit of that species. It differs chiefly in having black fruit when ripe and in its ever-bearing character.

A tree of it under observation this season had ripe fruit on it in the latter part of June, and to-day, September 10, there are still a few on it. It is this character that gives it its chief value. Besides this it has a pleasant tartness which none of the others, save its parent, *rubra*, possesses. The rest are far too sweet. The Japanese bears rather large fruit, but it is soft and sweet and not to the liking of many persons. The fruit of the Downing is very firm.

As an expeditious way to gather mulberries it has been recommended to spread a sheet under the tree and shake the limbs. If quite ripe, the fruit will fall with but a moderate shaking of the limbs.

In the south the common native mulberry is a favorite shade tree, making there a tree of some size. I have seen them wild here of quite tree size; and when young trees are set out to allow of unrestricted growth, a spreading, beautiful tree is the result. Nurserymen usually send it out in bush shape, but if cut down almost to the ground, it will make a strong shoot, the foundation of a future tree.

JOSEPH MEEHAN.

Philadelphia.

necessities of the tree as regards bushiness, etc., seem to demand.

BULLETIN No. 41 of the Florida Agricultural Experiment Station is devoted to a description of "A fungous disease of the San Jose scale." Following is a summary of the contents: 1. It has been definitely established that insects are subject to diseases. 2. Diseases of insects have been, and are being employed to destroy insect pests. 3. Some diseases of insect pests may be disseminated artificially with a profit. 4. This disease of the San Jose Scale is present on at least three continents and in many countries. In several instances it is recorded as an important factor in controlling scale insects. 5. It is doubtless native to Florida as it occurs on a native scale (*Aspidiotus obscurus*) in our hammocks. 6. This fungus may be transferred to trees affected with San Jose Scale and a disease produced among the scales. 7. Large quantities of material may be produced in the laboratory in a short time and at slight expense. 8. The laboratory-grown material may be applied successfully by fruit growers. 9. This fungus cleared the orchards more effectively of San Jose Scale than could have been done by many sprayings. 10. It is now being tested in the north and west. Copies may undoubtedly be had by addressing the Director of the Experiment Station, Lake City, Fla.

THE College of Agriculture and Mechanic Arts of the University of Missouri has issued an announcement of the courses in agriculture for the year. Copies may be had by addressing H. J. Waters, Columbia, Mo.

VANDA COERULEA.

This lovely orchid is often seen in bad condition I think through being kept in too warm a house. I find by experience that during the winter months they do finely in a temperature of 55° to 60° in a house well sunk in the ground and that is always charged with natural moisture sufficient for their wants without watering them at root only on very sunny days. When winter sets in I remove all potting material of sphagnum, etc., leaving the drainage and basket or pot only, hang them in the roof of a moist house, scarcely ever over 60° in winter. About the first of April I look them over, removing any drainage that is dirty, place a lot of fresh broken potsherds to round up from rim of pot, and over this place a thin layer of growing sphagnum, which gives them a nice appearance. Water sparingly, or about enough to keep the sphagnum in growing condition, increasing the watering as the season advances. When fine weather is established ventilation should be given both top and bottom and kept open day and night. The plants should be well syringed once or twice a day.

During the summer season the plants are grown 3 or 4 feet from the glass, on a bench over which is placed a rack so that circulation at both bottom and top is free. I find this rule of management is also good for *Vanda Kimballiana* and many of the arides. The latter I have grown much better with odontogloss from 45° to 55° than others in house at 60° to 70°. The plants were more robust and in every way better. Too much heat and moisture during the dark winter days is very detrimental to many orchids, and I think the cause of spot and rot sometimes seen in collections. W. M.

VANDA CÆRULEA



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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE NEW ROSE President Carnot is a good summer bloomer.

CLEMATIS PANICULATA is getting quite well distributed, as it should, as it is the queen among climbers.

PLUMBAGO LARPENTÆ proves to be quite hardy around Chicago with ordinary winter covering. It is now covered with dark blue flowers.

OLD native trees that seem to be losing their vigor may often be rejuvenated by digging holes here and there within a radius of say 20 feet and filling in with good soil.

MANY of the pompon chrysanthemums are in bloom out of doors. They are a little late this season on account of the cool weather in August. The earliest to bloom were Percy's seedling, Mr. Selly and Mme. Jolwart.

SO FAR this fall in many sections the season has been an unusually dry one. Should no rains come until hard freezing weather is expected, it is well to give shrubby beds, and trees planted within two years, a thorough soaking.

IF SOME of your plants have not done well this season, say *Lilium Wallacei*, *Spiræa palmatum*, or any plant that increases rapidly, take them up, add some fresh soil and replant, putting elsewhere the surplus. When there are too many plants trying to exist in limited quarters and in exhausted soil, only poor results may be expected.

THE *Rudbeckia laciniata* fl. pl. (Golden Glow) more than fulfilled its last year's promises. If you have not got it, get it by all means, and plant it this fall. It is very hardy, easily grown in any moist spot, and increases quite rapidly.

IN A BED of miscellaneous shrubs that was suffering badly for want of water during the present dry spell, so much so that they dropped their leaves, *Spiræa Van Houttei* remained in good form. *S. prunifolia*, which is supposed to stand drouth well, was in bad form.

DON'T be in a hurry to cover your plants. A little frost will do them good, in fact it is the thawing and freezing in the spring that does the most injury. When covered too early the field mice choose your covering for winter quarters and your plants for their food. If you wait until they have chosen other boarding houses you lessen the chance of damage.

WE have received a copy of the eighth annual report of the Missouri Botanical Garden, St. Louis, from Prof. Wm. Trelease, the director. It includes full details of the work of the garden for the preceding year and of proposed enlargement and improvement of same, in addition to records of a vast amount of original research in the field of botany. The "Botanical observations on the Azores" by Prof. Trelease are very full and interesting including a catalogue of plants. There are also botanical plates of a large number of plants. It is certainly a credit to the garden and its talented director.

THE COMMON Virginia creeper (*Ampelopsis quinquefolia*) is quite a wanderer with its roots in quest of food. Recently a variegated elm, two years planted, was noticed not to be doing as well as it ought. Upon examination it was found that the tree hole was filled with ampelopsis roots from a vine whose roots had left their own bed some eight feet away, and going through solid clay had taken possession. They had been absorbing the moisture intended for the elm hence its weak growth. There is an inherent power possessed by plant life to detect food and moisture from a considerable distance. A *Paulownia imperialis* planted within ten feet of a shrubby border, upon removal was found to have gone through a hard clay soil and entered the shrubby bed. The roots were not outside the original hole dug for it, except on the side towards the border. The roots towards the border, where they left the original hole, were four inches in diameter. On the other side none were over an inch, even close to the tree. All this would indicate that the tree had hardly got settled in its new quarters when it at once decided where the most food could be obtained and proceeded to expend its greatest energy in that direction. If the readers of GARDENING have plants growing near large trees or strong growing vines, and they are not doing well, it is evident that the soil is occupied by roots not intended for it.

SUCCESSFUL GARDENING.

Success in all things is seldom the result of luck. It comes only as the result of intelligent application and is mainly brought about by a constant attention to details executed at the right moment. The striker at the bat wastes his energies if he swings his club one second too soon or too late. So it is in garden work. The successful cultivator is he who attends to detail and at the proper time. In a rainy season go out into that garden in which

past experience has shown you that things seemed poorly grown, and the chances are that you will find the soil packed hard by the rains around the young seedlings, and baked by the sun and winds. On the other hand visit a place where things always look well, and here you will find that after the rains had packed the soil it had been loosened again by the thoughtful gardener that the roots might receive the necessary amount of air, and the moisture in the ground be retained.

In this garden you find tall growing plants in exposed situations securely yet loosely staked so that each spike retains its individuality and yet is secure from breakage. Go into the slovenly garden and you find the same plants sprawling upon the ground or else staked too late, after the main stalk had become procumbent and the lateral branches started upwards towards the light. Or worse still, the bunch of flower spikes may have been tied in a bundle as one would a sheaf of wheat.

From the beginning of the season until well towards July a gardener on a place of any pretensions must expect to be more than busy from early morning until dusk, and his services, being appreciated by the owner, entitle him to a life of more ease for the remainder of the year. But if he will do a little thinking, and guide his actions so that he does the right thing at the right time, his efforts will be better rewarded and his exertions less trying.

Experience is a great teacher, but how many are really guided by it. In the ordinary run of outdoor gardening each stage of experience with any one plant comes but once a year. Perhaps one is growing hundreds of varieties of plants, from the vegetable garden to the perennial and annual flower beds. Who can remember all the incidents connected with each variety from the seed planting to maturity? Few indeed are blessed with a memory so tenacious of the ordinary incidents of life. The thoughtful gardener, the one who desires to profit by the success or failure of the past, keeps a diary in which he notes each day's doings, and as the season advances he notes the failures, errors and omissions, and thus is enabled when another season arrives to profit by his past experience. This is merely one of the details so necessary for successful culture in gardening matters. This applies more strongly to young gardeners. Men of observing habit long in the business may have in time learned all the little tricks of their trade essential to success and yet never have kept a diary. Still they would have learned it much quicker had they kept one.

People will say: "oh, he can grow flowers, because he is fond of them." That is true. Parents can raise children, because they are fond of them, but not without anxiety and care, and an intelligent devotion to details. You will notice a young man whose behavior charms you, whose every action shows him a gentleman, and yet when you analyze all his actions and endeavor to ascertain why his manners so please you, you will find that it is in little things, in matters of detail, that in the main he is no different from anyone else, but that these "little things" give a roundness and polish to his manners that stamps him as a gentleman. He reached that state because his loving parents in bringing him up, paid due attention to detail, to little things. So it is in successful gardening; to have things in perfection your plants must have constant attention and their wants supplied at the proper time.

WM. C. EGAN.

We present herewith a portrait of Mr. Wm. C. Egan, whose articles in GARDENING have been so useful and instructive, and whose country place, "Egandale," situated at Highland Park, Ill., is now so well known to our readers through



WM C EGAN

the numerous engravings we have published.

Mr. Egan retired from business about seven years ago and devotes nearly all his time to the development of "Egandale" and to the Horticultural Society of Chicago, now serving his sixth term as secretary of that society.

It seems unnecessary to tell the readers of GARDENING anything about "Egandale." It is unquestionably the most charming country place around Chicago. It contains only six or seven acres, but every square foot is so utilized as to give the greatest possible variety of flower and foliage, all in harmony and without any apparent crowding. His beautifully kept place has done more to excite a love for garden effects among the residents of this suburb than any other agency could have done, and, indeed, it has exerted a much more than local influence. "Egandale" has come to be the Mecca of all lovers of ornamental horticulture in the vicinity of Chicago.

Mrs. Egan is equally fond of the beauties of plant life and is also an excellent amateur photographer. To her talent in this direction we are indebted for the many fine photographs that have appeared as illustrations in GARDENING.

It is but fair to Mr. Egan to state that this portrait was prepared from a photograph given the writer as a personal memento several years ago and that he had no knowledge that it would appear in GARDENING. Knowing his modesty we decided to use the portrait and "explain" afterward.

THE NEW YORK GARDENERS' SOCIETY.

The New York Gardeners' Society's first annual dinner and horticultural exhibition, which was given at the Grand Central Palace, New York City, on Saturday evening, September 11, was in every way a pleasant success. Some 70 prominent private gardeners and commercial horticulturists partook of the good things provided, and each seemed to consider it

his duty to spread the occasion's infectious joviality. If there be any one thing more than another which tends to give pleasure to old gardeners, it is their gathering together on occasions like this, and recounting the glories of days long past.

The dining table, which was handsomely decorated, was arranged in the center of the exhibits; the brilliant colors of cannas, the galaxy of hues in the dahlias, the gladioli and innumerable herbaceous flowers, the delicate tints of orchids set in webs of graceful ferns, all combined to make a magnificent frame to the festive board where an elaborate menu was discussed.

With the "Smoke Tree Blossoms" and the "Chrysanthemum Water" came the flood of eloquence and song. President John Shore presided and after a few remarks urging those present to enjoy themselves, he introduced as toast-master of the evening, past master Charles B. Weathered, who can always be depended upon to draw forth best results.

The exhibition, which was non-competitive, was a great success, notwithstanding that the thermometer reached above the hundred mark. C. W. Ward, Queens, Long Island, made a grand display with a collection of 50 of the best varieties of cannas, including the cream of both standard and new sorts; some 50 varieties of dahlias, and his large collection of geraniums. W. A. Manda, South Orange, N. J., exhibited a fine group of brilliant colored caladiums and several vases of the new canna "Manda's Ideal" and "Robert Christie." G. B. Winslade, Mamaroneck, N. Y. showed a bench of outdoor flowers, including a special strain of zinnias, which were of immense size and very bright, also several varieties of peaches,

nectarines, tomatoes and a set of prize-taker onions, all of which showed remarkable culture. A. L. Marshall, Pawling, N. Y., is a canna enthusiast, and took advantage of the occasion to exhibit some 50 vases of as many varieties of new seedling cannas raised by himself. A great many of these are improvements on existing varieties. Some of Mr. Marshall's cannas have been certificated by the society, and are proving great acquisitions. The same exhibitor showed a fine table of dahlias and salvias.

James Hill, gardener to H. M. Brooks, Newport, R. I., sent a grand flower spike of a rare bromeliad (name unknown), which was of great interest to all present. Robert Laurie, gardener to C. Vanderbilt, Newport, R. I., exhibited vases of *Acidenthera bicolor*, a pretty and popular flower with Mrs. Vanderbilt, and a seedling tritoma raised by Mr. Laurie, which differs from *T. uvaria* by being freer flowering and a shade lighter in color.

Lager & Hurrell, orchid experts, Summit, N. J., sent a handsome specimen of *Cattleya aurea* (*chrysotoxa*) with several beautiful blooms. Robert Angus of Tarrytown-on-Hudson, N. Y., showed a well grown piece of *Cattleya labiata* which bore many splendid flowers. From Henry A. Dreer, Riverton, N. J., came a vase of gorgeous night blooming nymphaeas; they were magnificent. W. P. Peacock, the dahlia specialist, Atco, N. J., displayed 70 varieties of single, cactus, pompon and large show dahlias. W. G. Eisele, West End, N. J., exhibited several vases of his new seedling cannas, one of which had beautiful variegated foliage.

A. T. Brill, Pawling, N. Y., had several dishes of well grown tomatoes Ignomut, Ponderosa and Crimson Cushion and several varieties of string beans. Richard

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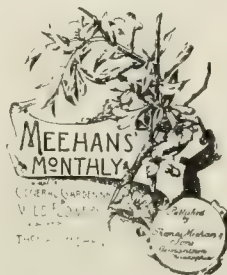
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Brett, Yonkers, N. Y., arranged two tables of cut flowers which included clusters of the pretty stove flowers *Ixora javanica* and *Dipladenia amabilis*, these being set off with fronds of *Adiantum gracillimum* and *Goniophlebium subauriculatum*. A. J. Wengerter, Bay Ridge, N. Y., displayed some 25 dishes of as many varieties of vegetables, the quality of which places Mr. Wengerter in the front rank of growers.

Andrew Grierson, Rye, N. Y., has always something novel, and on this occasion showed a collection of flowers of rare beauty. John Lewis Childs, Floral Park, N. Y., exhibited his collection of gladioli and several varieties of hardy flowers. G. Granz, Hicksville, Long Island, displayed 50 named varieties of dahlias. From A. Welsing and Chas. Zeller, Brooklyn, N. Y., came collections of dahlias, geraniums and new cannas; and from John Young some well grown lily of the valley. James Kirby, Hempstead, L. I., exhibited 50 varieties of annuals and herbaceous flowers, and John M. Hunter, Hempstead, L. I., brought several vases of cannas.

Perhaps the exhibits which created the most interest were the two which had arrived by the steamer *Campania* on the previous day, one being six specimen celery almost four feet high and of fine quality, grown by C. Alldred, dahlia grower, Tyldesley, Lancashire, England, and a collection of vegetables, including some immense cauliflowers, red and white cabbages and parsnips from D. Scott, Liverpool, England.

The regular meeting of the society was held shortly before the dinner, at which the question of a November show was discussed. A communication was received from the society ladies of New York, desiring the coöperation of the society in giving a grand floral exhibition in November, in aid of the hospitals. The exhibition committee was empowered to accept the offer and make the necessary arrangements. It was also announced that Mr. John E. Lager, the celebrated orchid collector, would deliver a lecture at the next meeting of the society, on October 9, on the subject "Orchid collecting, or two years in the wilds of South America." This promises to be the educational event of the year, and all gardeners and florists are invited to attend.

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THE SIXTH annual session of the National Irrigation Congress will be held at Lincoln, Neb., September 28 to 30. C. M. Heintz, Los Angeles, Cal., is secretary of the national executive committee. Dr. Clarke Gopen, 904 Columbus Memorial Building, Chicago, is chairman of the sub-committee for Illinois.

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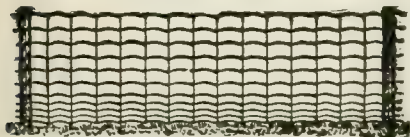
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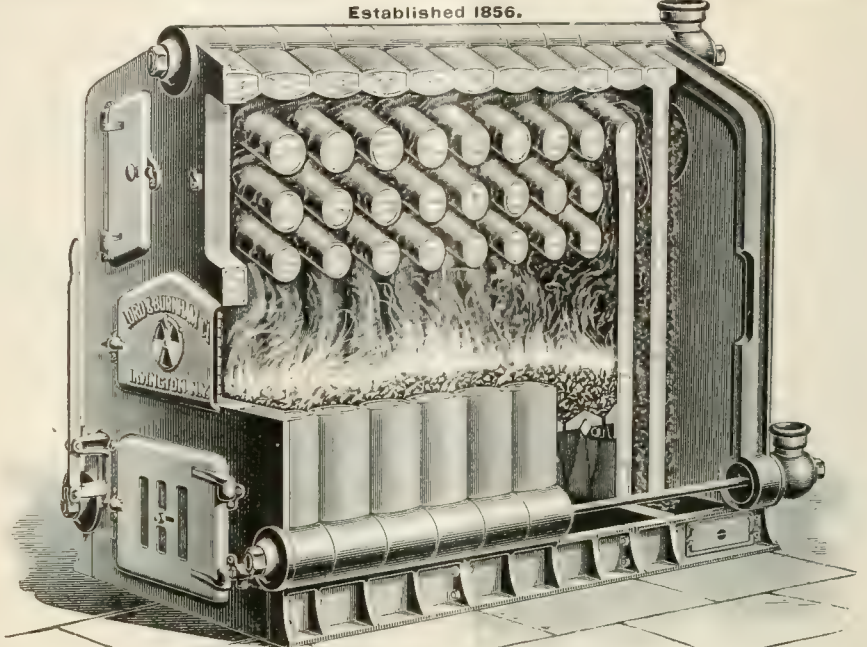
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ESQ., AT NORTH EASTON, MASS.

A visit to Mr. Ames' greenhouses at North Easton is at all times interesting. They are open to visitors from sunrise to sunset, and when the weather is favorable the extensive greenhouses are thronged with people. It is one of the places of attraction to visitors from surrounding towns for miles. Mr. Ames' generosity in allowing the public free access to his greenhouses is thoroughly appreciated and has had an educating and refining

influence. Considering the very rich collection of plants brought together and the many thousands of visitors, no one act of vandalism is reported.

The orchids are at all seasons attractive. The past years have added such a wealth of species, as well as varieties, that an orchid house has continuous attractions throughout every month in the year, not mentioning now the numerous hybrids and bi-generic hybrids among the lalias and cattleyas, which make up a large showing in Mr. Ames' collection and without any doubt comprise the finest orchids grown. No collection of orchids amounts to anything now unless you can show a good sprinkling of hybrids, exclusive of the vast numbers of

cypripediums, which are now becoming so numerous that there is no man in the profession to-day who dare claim to know one-half with any degree of accuracy.

Masdevallias, odontoglossums and many oncidiums are a fine class of orchids, and all are at home together, one house, one treatment. Then the combination of color ranging in masdevallias from scarlet through purple and pink to white; oncidiums embracing every conceivable shade of yellow, and the *Odontoglossum crispum*, with their grand arching spikes of flowers, some massive and pure white, others shaded pink, some rose, others delicately spotted, while some are heavily blotched with red and brown. Also the

Odont. Pescatorei, with their smaller flowers, but much larger and more graceful flower spikes of white, pink and purple spotted flowers; the *Odont. triumphans*, orange and brown; *O. Andersonianum*, many forms; *O. elegans*, *O. excellens*, *O. odoratum*, *O. mulus*, *O. nevadense*, *O. nævium majus*, *O. cirrhosum* and *O. polyanthus*. These are

besides his orchid houses, a large stove 65x30 feet, which is devoted to alocasias, anthuriums, crotons, pitcher plants, ferns, marantas, etc.; a central palm house, a large fernery, 40x45 feet, two miscellaneous houses and a north house which is devoted to plants principally in flower, the roof being covered with *Lapageria rosea* and *alba*.

etc., the effect of exposure, elevation and temperature. They are deservedly popular as house plants there being no plant that will thrive better under adverse circumstances or respond more readily to kind treatment. In the greenhouse they are indispensable. Grown in large pots or tubs, as shown in our illustration, they are at once stately and graceful. The photograph shows one of several specimens in the conservatory of Mr. J. H. White, Brookline, Mass. This plant measures from tip to tip of the extended fronds, nearly twelve feet.

MARECHAL NIEL ROSE.

I would like to ask what is the proper treatment of a Marechal Niel rose planted in a greenhouse that is kept at a temperature of 55° in winter? It has made a splendid growth; has been planted a little over two years. I had it cut back last year in September (29th) but it did not bloom till spring, and but a very few then. Would it not be interesting to the readers of GARDENING to know the proper treatment of a Marechal Niel rose?

SUBSCRIBER.

Subscriber does not say whether the roots are confined to a given space or have an unlimited territory to wander in. If the roots were confined to a limited area the moisture at the roots could be controlled. The Marechal Niel is one of the strongest growing of its class (the Noisettes) and the bloom for size, substance and richness of color has in its class never been surpassed. For years it was the most talked of and generally grown of almost any rose, but the advent of *Perle des Jardins*, *Cornelia Koch*, and many other fine roses with their grand stems has compelled the Marechal Niel to take a back seat. Still as a climbing rose, especially in a private conservatory, it has no equal. The Noisettes have their season of growth and season of flowering, unlike the true teas, which are really the only perpetual flowering roses worthy the name.

To produce good flowers of Marechal Niel with good stems it should be treated something as we do our hot house grapes, without such an extreme of cold and dryness as the grapes will endure. Encourage it to make a strong growth with plenty of water at the root and syringing of the foliage. When the young growths near the main stem begin to ripen and show the eyes well developed, dry off at the root partially if you can and syringe only enough to keep down red spider. In a few weeks the wood of the young growths will be firm and hard, then cut back to five or six eyes and give heat and moisture, and the break from those eyes should be fine flowers. If a lateral growth has extended three or four feet, pinch off the end, it may help to store up some strength in the buds near the main shoot.

Subscriber should not be discouraged because he has not been rewarded with flowers. Neither the Marechal Niel nor any of its class are by any means precocious, and if given an abundance of root room will keep on growing. The temperature of 55° for winter is all right. If shortened back now and encouraged to grow and treated as above described a crop should be had in February, although 55° is not heat enough to develop good flowers. M. Niel in winter frequently decays just before its fine petals are fully developed. The cause, I believe, is a low temperature and want of sunshine.

WM. SCOTT.



SPECIMEN NEPHROLEPIS EXALTATA. TWELVE FEET ACROSS.

only a few of the many forms of odontoglossum which from February to July are continuously flowering and make up a variety of coloring which must be seen to be thoroughly understood. I, for my part, cannot understand why more people do not commence to grow this class of orchids. They are easily grown, they will last weeks, aye, some of them months, in good condition. I have had the pleasure of conducting many ladies through Mr. Ames' greenhouses at different seasons, and the expressions of pleasure which escaped them at the sight of a few spikes of odontoglossums when they have indifferently passed a whole bench of cypripediums, including some of the choicest kinds, is sufficient evidence of their value.

Mr. Ames' establishment comprises,

In the palm house the principal specimens are *Anthurium Veitchii*, which is central in the photograph here represented. It is one of the finest plants known, being about fifteen feet in diameter. *Phœnicophorium sechellarum*, the thief palm, and other fine plants are represented in many specimens.

Mr. Ames has a long range of fruit houses, growing grapes, nectarines, plums, figs, etc., also a cucumber and tomato house.

R. W.

NEPHROLEPIS EXALTATA.

This fern is one of the most widely distributed, being found abundantly in both hemispheres. Specimens from different localities vary greatly as to habit, length and breadth of frond, arrangement of sori,



A CORNER OF THE SHOW HOUSE AT MR. F. L. AMES

HEATING A SMALL GREENHOUSE.

I have built a little greenhouse 12x18 and have yet to put in a heating apparatus. Will it be best to set the boiler down in a pit or can it be set on the ground floor of the greenhouse as I cannot well go down more than about 3 feet. What boiler would be best to heat such a house? I have my glass butted and screwed down with strips. Is that all right? Also please tell me something about putting in the hot water pipes. SUBSCRIBER.

There is a difference of opinion about the question of sinking the heater in a pit or keeping it on the surface, but the great preponderance of opinion, including almost all practical men, is in favor of putting the heater down as low as possible within reason. It would take quite a chapter to explain the reasons why, but they are simply this: The quicker you can get the circulation the sooner will the water be back to the fire to be warmed up again. Now the motive power, if it can be so called, will be just in proportion to the difference between the height of the flow and return pipes. If you could have a perpendicular fall of eight feet in your return pipe near the heater your circulation would be rapid and perfect. If your flow pipe went away from heater horizontally and returned the same, having for a drop only the difference between the outlet in heater of flow and return, your circulation would be miserably slow.

Three ft. will do but put heater down as low as that.

You can help circulation by letting the flow pipe be a 2-inch run along the wall just below the glass; at the farther end drop down under the benches and return with three 1½-inch or two 2-inch pipes; that will keep a 12 ft. house up to 50° in the coldest weather. The flow can be fastened to the posts or wall with hook plates and when painted white is not the least unsightly. The returns can also be fastened to the wall one above the other, or if not convenient that way, can lay horizontally under the bench on a pier.

The most important part of the plan is, are you going to let the flow pipe rise to its highest elevation over the heater, there tap it with a small pipe (½-inch will do) to let air escape at all times, and from that point descend till you enter heater again. One inch drop in flow in the 18 ft. is just as good as a foot, and one inch drop back in the return. If you adopt this plan, which up to date is the simplest, most satisfactory and the least trouble to watch, in fact all round the best way, you will need a barrel or some vessel holding a few gallons of water elevated a foot or so above the highest part of your heating pipes. When there is water in that barrel your pipes must be full. The small ½-inch pipe to let out air can run up and empty into top of the barrel. You will have no kicking, thumping or pet cocks to watch; all the watching will be to see that there is water in the barrel,

which we will call the feeding cistern.

The butted glass with strips and screws is all right.

WM. SCOTT.

The Flower Garden.**THE SPRING FLOWER GARDEN.**

The display of spring flowers depends largely on the number of bulbous plants we grow. They are the first flowers of spring and great is the variety of them. We think there are no flowers so beautiful and the majority of them any one can grow, as they only require to be planted and left alone when they will send up their charming flowers, some of them while the snow is still on the ground. In the cottage garden here bulbous plants form an important part in the make-up of our garden. The ground is alive with them in endless variety, and our annual display of spring flora is a sight long to be remembered.

Among the choicest bulbs we grow are the narcissi. We grow them in long borders, planted in clumps, one variety to each clump. Most of them are hardy, with the exception of the *polyanthus* section and with us these are tender. The jonquils prove quite hardy, but some years they do not flower so well as they do others. The large flowering sorts, such as Emperor, Horsfieldii, Sir Watkin, etc., are all perfectly hardy and are the

showiest of the whole section. We also have the double sorts, such as Orange Phoenix, Von Sion, *Alba plena odorata*, etc.; the double sorts are not so attractive as many of the single varieties, but a few clumps of each should be grown as they are nice for cutting, the white one especially.

The Poet's narcissus, *N. poeticus* and *ornatus* are general favorites wherever grown, their sweet scented, beautiful flowers being much prized for cutting. They should be largely grown for this purpose as they are of easy culture and flower so freely. Moreover they are long-lived and improve from year to year if left to take care of themselves. *N. ornatus* blooms much earlier than the plain *poeticus*, bears larger flowers and is the most perfect flower of this section; but both should be grown, as in this way a succession of bloom can be had for a long time. They are very nice to naturalize in the grass, and if planted in some part where the grass is not cut until late in spring, they will soon form a large colony, and when planted in this way the effect is beautiful. The hoop petticoat varieties are also nice for naturalizing and do well if treated in this way, or they can be used for edgings, as they only grow a few inches high.

Little need be said about the tulips as they are the most important bulb we have for spring flowers. They are so showy and have such a variety of color that no garden is complete without them. They grow in most any kind of soil, but like most all bulbous plants prefer a sandy one which has been well enriched. But a lot of rough manure should not be dug into the soil at this season; if the beds had a good coating in spring, before the summer flowers were put out, that is all that is needed until spring time again.

Hyacinths, like the tulips, are so well known that we will pass on to the more uncommon, or plants seldom seen in our gardens. First of all comes the snowdrops. If these are planted in a sheltered spot they come into flower very early. The past winter we gathered a nice bunch on February 7, and every day until late in spring we had our bunch of snowdrops. We use bell glasses to cover them in order to keep the flowers clean, and for cutting purposes they are all that could be desired. They are fine to naturalize in the grass and if planted quite close together a beautiful colony will soon be had. They improve with age and when once planted all that is required is to leave them alone. The variety *Elwesii* is the largest and is much finer than the common one. The flowers are quite small and should be planted in a mass as a few bulbs are of little use and make no show. A thick line of them around a border look nice, but much care has to be taken when digging, and in such a place we always plant a few inches deeper than we would in the grass.

After the snowdrops comes the winter aconite, *Eranthis hyemalis*. This is one of the earliest harbingers of spring and a pretty little flower it is. It will grow most anywhere, under trees, in the grass, or in fact in almost any place or soil. When well established it forms a sheet of glistening yellow flowers which last a long time in perfection. It is of no use for cutting purposes.

The scillas are of a free flowering nature and for a broad line or mass are very desirable, but many have to be planted and quite close together before much of a show is had. *S. siberica* is the one mostly seen in our gardens and is the earliest to flower, *S. campanulata* is a larger and

later blooming species and looks very much like a small hyacinth. White, blue and red or rose are the colors found among them.

Crocuses are very showy while they last and make a fine display. Grown in a matted line in the front of a border they look nice, but planted in the grass is where they look at home and when once planted they need no more care.

Leucoium vernum is a beautiful early-blooming plant and resembles the snowdrop, but is of taller growth. The flowers are pure white with a green spot on each of the petals. It is one of the best spring flowers for cutting and will grow most anywhere. We have it associated with the choice primroses in a shady border and in such a place it does fine as it seems to like the leaf soil of which the border is made. It lasts a long time in flower.

The bulbous irises are all desirable. The first to flower is *I. reticulata* and a pretty little flower it is. It blooms very early, before it makes any leaves, and so nice it is that all should grow a few of it. The English and Spanish irises make a good show in late spring. The Spanish blooms first the English about three weeks later. These irises need a warm, well drained place in which to grow as they are not over hardy. The flowers of all the bulbous irises are large and handsome, the color rich and varied. They look nice if planted in clumps of say six to twelve, and left to themselves they will improve from year to year.

The guinea hen flower (*Fritillaria Meleagris*) is a beautiful plant and too many of it cannot be grown. It does fine in the border where it can be left to run at will, and will improve from year to year. The flowers are drooping and last for some time. The markings are odd and striking and a patch of them should be in every garden.

The crown imperial (*Fritillaria imperialis*) is a vigorous growing plant and with us it is the hardest of all our bulbous plants. It is an old-fashioned flower but where it does well is quite nice and makes a good border plant; but a few is all that is needed. With us we have to plant it every year as the bulbs seem to rot soon after flowering and many of them sometimes before they flower. *Chionodoxa Luciliae* grows a little taller than *Scilla siberica* and has larger and more numerous flowers. It is blue in color with a white center and can be used the same as the scillas for massing or edgings.

To associate with these bulbous plants we use many of the earlier flowering perennials such as forget-me-nots, daisies, alyssum, arabis and such like plants; in fact the garden in April and May is more interesting than at any other time of the year as we grow so many of these to make a big show. After they are past they are pulled out and a new lot raised from seed each year. This is to make room for the summer flowers and to avoid any bare spots in the garden.

Mahwah, N. J.

DAVID FRASER.

PLANNING A GARDEN OF HARDY PLANTS.

Before planting or arranging a new border, a list of all the plants to be used should be made out, their respective height, time of flowering and color should be marked alongside of the names, then on a sketch or plan of the grounds their exact places can be determined on with far greater ease than would be the case without the aid of paper and pencil. It is an advantage if we can associate the herbaceous plants with spring flowering

bulbs, but these should always be planted rather deep so that in hoeing or cleaning the bulbs and tubers are not unearthed or laid bare.

The introduction of flowering shrubs is also advisable, especially in the back part of a wide border; the planting of the whole should be rather close than otherwise, excepting with the rank and tall growing. We should endeavor to cover the ground with verdure in the first year after planting, thinning out is more satisfactory than filling bare spaces, and after a few years we would rather take out every other plant in a thickly planted patch than wait that long for the ground to be covered. Usually the border, when once planted, may remain almost undisturbed for years. A few species may require dividing or transplanting the third or fourth season and this should not be delayed until spring, as we have more spare time in the autumn and can do it then at leisure, besides it is better for most of the plants, as they then have a chance to send out a few new roots and establish themselves before winter sets in and they start more vigorously the following spring.

Where mistakes have been made in planting, where the colors do not harmonize or the heights of neighboring plants do not correspond with each other, it is easy to make the alteration now by substituting more suitable objects.

To have an attractive border of hardy plants at all times from the very beginning of spring until November is not so difficult as it may seem to those unacquainted with the vast material at hand; there is hardly a month in the year when we may not go out in the garden and pick a few flowers at least from our hardy plants; even in midwinter we can gather a bunch of Christmas roses or *eranthis*. In February *Erica carnea*, though covered over with snow is in full bloom; March brings out scillas, crocus, arabis and other things, while April gives us a great number and large variety of bulbous and spring flowers in general. If we only make the right selection and make it large enough an almost constant display may be ensured, but even if there were no flowers at all in the winter the refreshing dark green of the *iberis*, the glaucous foliage of the various *dianthus*, arabis, *aubretias* and *aethionemas*, the many sedums, *sempervivums* and the green carpets of *spergulas*, *arenarias*, *prunellas*, *phloxes*, *linneas*, *erinus*, *drabas*, *armerias*, etc., etc., would be enough to cheer us in our walk through the garden on a bright winter's day. For this reason we must not neglect to include these pretty evergreen plants in the list and introduce them freely in the most conspicuous places of the border; they have the advantage over other things in possessing a cheerful appearance even in midwinter when all plant life is supposed to be at rest.

J. B. KELLER.

Rochester, N. Y.

VIEWS IN LINCOLN PARK, CHICAGO.

We present herewith a group of views in Lincoln Park, Chicago.

In the upper left hand corner is a charming view across one of the artificial lakes, and adjoining it at the right is a view across the strip of water known as "the canal," a part of one of the handsome vases for which the park is noted being seen at the right. The statue of Linnaeus, the great Swedish botanist, was presented to the park by the Scandinavian people of Chicago. It represents the botanist returning from a collecting



VIEWS IN LINCOLN PARK, CHICAGO.

VITIS COIGNETIAE.

This vine came to us a very few years ago as one that in Great Britain presented a magnificent sight in the vivid coloring of its leaves in autumn. After a trial of three seasons I am discarding it as an ornamental plant. With me it fails to color at all, but takes on a dingy, rusty look that condemns it. It would be interesting and instructive if those who have tried it would give their experience in GARDENING. Climatic influences must play their part in the coloring of the

leaves of this grape vine as there is no question about its great beauty in England.

W. C. EGAN.

expedition, under his arm being a book of specimens and in his hand a few flowers gathered by the way. At the left of the base of the statue is seen the entrance to the park greenhouses, with a group of decorative plants on either side, and at the right a handsome bed of *Caladium esculentum* bordered with coleus. In the lower left hand corner is a view of a rustic stone bridge crossing the narrow part of one of the ponds of aquatics, and to the right is seen a corner in the herbaceous garden.

THOSE who are growing tender climbing roses, the wood of which they are anxious to carry over winter, may learn something from the following quotation from "Physiology of Plants:" "By pinching off the apex of the shoot and removing some of the leaves, the ripening of the wood is considerably accelerated. The

removal of the apex of the shoot removes the tissues which attract the greatest amount of water, and the removal of the leaves allow the shoots to receive more light, which is one of the chief factors in ripening wood."

Aquatics.

VICTORIA REGIA.

The accompanying illustration shows a plant of *Victoria regia* in bloom in the aquatic house of the Phipps Conservatories, Schenley Park, Pittsburg.

The two plants show sixteen leaves, the largest of them measuring 6 feet 10 inches in diameter, and the photograph shows one with a little girl sitting on it. The plants commenced blooming in the early part of June and have delighted a very large number of visitors continually since, having from three to six flowers out most of the time.

The excellent engraving of a flower of this noble aquatic is from a photograph taken by Prof. S. W. Burnham, the noted Chicago astronomer, who loves flowers almost as well as new double stars. The spiny stem is well shown against the white envelope.

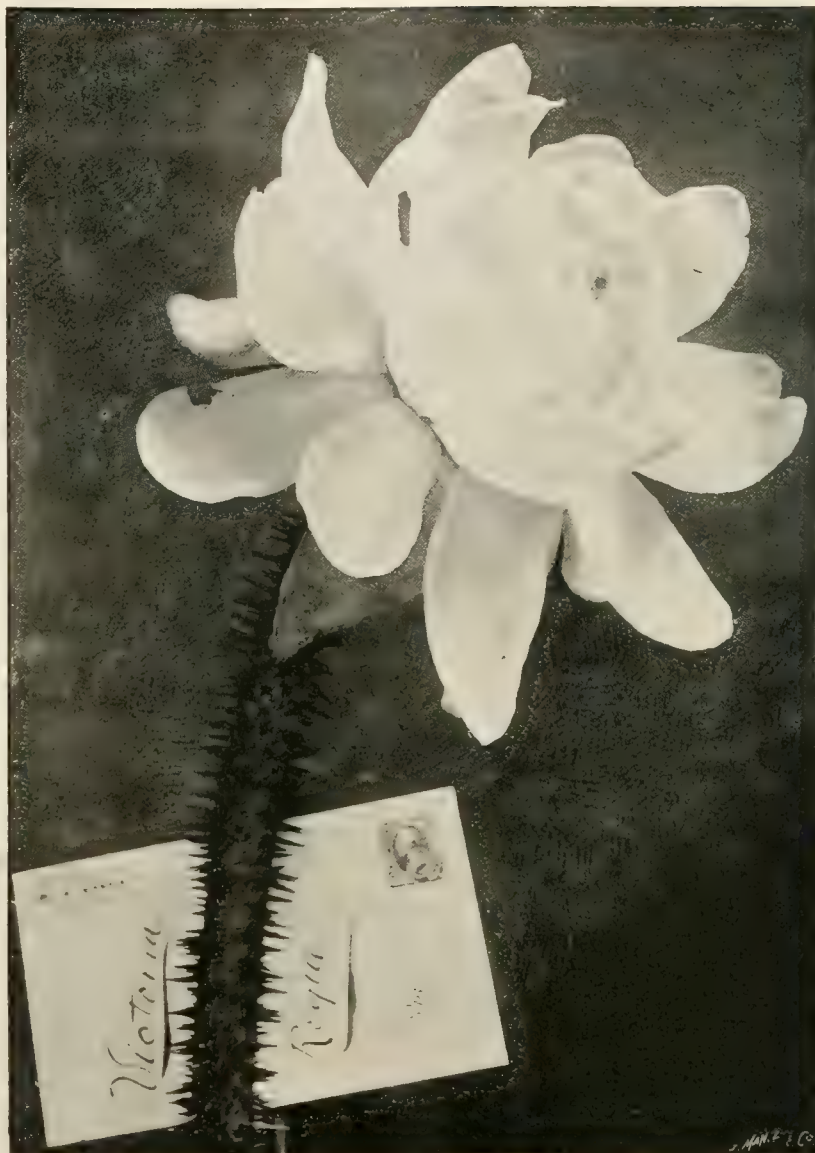
Trees and Shrubs.

BEAUTIFUL AUTUMN FOLIAGE.

Everyone knows how beautiful our forests are at this season of the year when the autumn tints are on them. Travelers from Europe who are here at this season usually express great admiration at the sight. It is an unusual one to them, as their native trees do not take on the brilliant colors ours do. It is somewhat different in Japan, many trees and shrubs of that country displaying considerable beauty of fall foliage. I have found that most persons very much over estimate the number of varieties of beautiful fall foliaged trees and shrubs existing in our woods. They see a large forest, presenting a splendid picture, and are impressed with the idea that there are very many kinds of trees in resplendent attire. But I think that in any one woods there would not be over a half dozen of golden or brilliant hue at any one time. It is often the vast background of green and brown foliage that helps so much to make the picture.

The following is a nearly perfect list of native trees and shrubs worthy of being planted for their autumn color; sugar maple, red maple, *Andromeda arborea*, dogwood, both white and red flowering, sassafras, sweet gum, sour gum, tulip tree, scarlet oak, red oak and pin oak. Of shrubs there are the several sumachs, *Itea virginica*, *Vaccinium corymbosum*, and the Virginia creeper vine. Add to these the following foreign sorts, Japanese blood-leaved maple, *Berberis Thunbergii*, *Viburnum rotundifolium* and *Ampelopsis Veitchii* and the end is nearly reached.

As those of native origin are not found in like localities except in a few instances it is not often that more than two or three sorts are displayed to the view at once in any one woods. I think the sour gum, *Nyssa multiflora*, lovely as it is has been unduly placed above the sweet gum, liquidambar. In the woods hereabouts the sour gum takes on its red hue but a



A BLOOM OF THE VICTORIA REGIA.

very short time before its leaves fall. The sweet gum, on the other hand, is lovely now, October 4, and it will continue so for a month longer. There is red, green and yellow blended together throughout, and then the star-shaped leaves are beautiful in themselves. Recently in Virginia, I saw several of these trees standing somewhat alone in an old meadow. The foliage was showing lovely scarlet and yellow. In the lower part of the meadow it was quite wet, and there the foliage had changed earlier and the autumn tints were much more intense than was the case with those on dryer ground.

Whenever any of the trees mentioned are in any way injured the color comes earlier and is more intense than occurs when it is in full health. The sweet gums in the swampy ground is an instance of it, and I have seen sugar and red maple standing in ground holding too much water turn color a good while before others on higher ground did, and the color was brighter and better.

Of the three oaks, scarlet, red and pin, they are of value in the order named. The scarlet is of special merit, as it holds its leaves very late. It is often the last

tree of all to lose its leaves in our forests, and it is often yet green and unchanged when other trees about it have lost their leaves. When the change comes the scarlet hue is vivid.

The sassafras is not often classed as one to be thought of for its autumn foliage, but to me its soft yellow hue is almost as pretty as that of the sugar maple. And the same may be said of the tulip tree.

The value of the sumachs for autumn display is well known. It is unfortunate that one of the prettiest of all, the poison vine, can be handled by but few. The other poisonous one, *venenata*, a small tree found in swamps, does not become as handsome in the fall as others do.

The dogwood, *Cornus florida*, is always handsome. It usually fringes a woods, and shows there to great advantage. Its variety, the pink flowered one, has leaves of a darker hue throughout the season, and this helps it when its time to change color comes.

Itea virginica, *Andromeda racemosa* and *Vaccinium corymbosum*, change to scarlet. *Viburnum plicatum rotundifolium* takes on a bronze color. I don't know but what the *Forsythia viridissima*



VICTORIA REGIA

should be entered, on account of the almost black color of its leaves at this season. JOSEPH MEEHAN.

Philadelphia.

SOME NOTABLE TREES AND SHRUBS ABOUT THE CAPITOL GROUNDS, WASHINGTON.

When on my way to Virginia recently I took the opportunity to stop over a couple of days at Washington, to see the trees, shrubs and flowers of that beautiful city, and of Arlington and Mt. Vernon. I propose at this time to mention some of those I saw about the capitol building. There were many there that pleased me greatly, not that they were new but because that the delight of seeing them flourish out of doors is denied to us poor northerners.

Approaching the building from Pennsylvania avenue, on the right of the flights of steps is a splendid nook for what are with us considered partly tender plants. There were fine bushes of *Abelia rupestris*, full of flowers, lots of the white jasmine, *officinale*, Scotch broom, etc., and scattered here and there through masses of shrubs were some fifty or so of the *Magnolia grandiflora*, in sizes from 6 to 15 feet. And how it pleased me to see it thriving as it was, yet grieved me to think we could not get it to thrive here, was the sight of my old friend the English laurel, *Cerasus Laurocerasus*. I could not help wondering why I did not see the Portugal laurel, the sweet bay and *Photinia serrulata*, as I had supposed them fully as hardy as the English. But

probably it has been found that they are not. Aucubas, both green and spotted leaved, and many of them in berry, were there too, and in luxuriant growth. Aucubas do fairly well about Philadelphia, and the *Osm. anthus aquilolia*, which was to be seen in large bushes about the capitol, is entirely at home with us.

I noticed the use to a great extent of *Juniperus prostrata*, *Bambusa Metake*, *Yuccas filamentosa* and *gloriosa*, *Mahonia aquifolia*, *Hypericum calycinum*, cotoneasters and yews. The many *Yucca gloriosa* plants were mostly in flower. Some were past flowering, others in their prime, while still others were just showing flower. There seemed to me more than one kind among these *gloriosas*, some having stiff, partly erect foliage, others that of a drooping nature, while still others seemed to have flowered a month ago. Mentioning this to my friend William R. Smith, when I met later in the day, he said there were several varieties of them, and I remember Mr. P. J. Berckmans saying there was an early and a late flowering sort.

Following on the shrubbery plantings to near the east side disclosed some large groups of English laurels, some individuals being 12 feet high and very bushy, indicating that the cold of winter cannot have affected them much of late, if at all. Some very nice specimens of the Japanese holly, *Ilex crenata*, were here. This is perfectly hardy in Pennsylvania, and it will be more used as it becomes better known. Here, to, was the hardy orange, *Limonia trifoliata*, full of fruit, but not

as full as others seen later on. Both *Magnolia glauca* and *M. grandiflora* were to be seen in large size. The *grandiflora* was showing ripe pods of seeds; and these pods on this and other trees of it seen were very much prettier than those on our Philadelphia trees become. The flowering with us is too late to permit of the full maturity of the cones, though the seeds perfect themselves enough to grow. Some rhododendrons on the north side of the buildings had seen hard times in their day, evidently. I should think there must be a great sweep of wind where they are at times. And a little farther along were some white fringe, *Chionanthus virginica*, which seemed discontented with something, either soil or situation.

Farther away from the building on the grounds surrounding it, are some interesting trees. *Sophora japonica* was in flower. This late blooming tree is most ornamental when of good size. But it is such a slow grower that one must wait a good many years before he sees flowers on the tree he plants. *Magnolia macrophylla* is pretty always, but a low branched one here, full of its roundish pods of fruit, would have delighted many a one to look at.

A fine specimen of *Cornus Mas*, 8 feet high by 15 feet in width, must make a grand showing both when full of its bright yellow flowers in April and its red cherry-like fruit in August. *Ziziphus vulgaris* is rare in collections, hence the sight of one some 35 feet high and full of fruit pleased me much. This tree has lovely bright green leaves and is quite

hardy in Pennsylvania. One species of *ziziphus*, the *Spina-christi*, is supposed by some to have furnished the crown of thorns which was placed upon our Saviour's head. The twigs of *vulgaris* are very suggestive in the same way. A beautiful specimen of the post oak, *Quercus obtusiloba*, proves what I have before observed, that it is a splendid lawn tree, where a round beaded, spreading oak is required. The branches push out horizontally to a great distance and its foliage is ample.

Magnolia stellata, 9 to 10 feet high, must be a great attraction in April when in flower. And I would like to see the English holly and its variety *laurifolia*, now full of berries, when the fruit is ripe in the autumn. These trees are 9 to 10 feet high and very pretty now, the foliage being of a much darker green hue than it is on our native one. *Laurifolia* is almost spineless, only a leaf here and there having any spines at all, and this variety is thought to be rather harder than the common one.

While taking notes of the trees and shrubs mentioned above, a guard informed me—in a perfectly proper and respectful way, I am pleased to add—that I must "Keep off the grass." But I succeeded in running on now and again, to get a better view of some tree, without objection from him, after telling him my object. But I would say to anyone not acquainted with trees that it would be time wasted to go on the grass to look for their names for rarely is one named. I think the lack of names to the trees and shrubs mars the pleasure of thousands who visit our public grounds and parks. A prominent superintendent once told me that the public did not care a "continental" for names, but he never made a greater mistake than this.

Philadelphia. JOSEPH MEEHAN.

PLANTING FOR FALL COLOR EFFECTS.

Now that the woods are decked in all the glories of their autumn colorings, they should remind us that we do not pay enough attention to that feature in our home plantings. Many own places of fair size, places where distant views are available. Perhaps in the rear of our homes we possess a pasture field, a portion of which may be in a direct line of a vista from our windows or from our porch, or a broad meadow may be before us. Why not make a special planting there for fall effect? Why not bring the autumn glories of the woods to our own doors? We plant the golden elder, the golden hop and the purple plum in our shrubberies, that we may enjoy the high tones that nature sometimes assumes as a summer garb in her garden forms. She seldom departs from her chosen shades of green in her indigenous growths, but reserves her energies in that line for the closing scene in the leafy panorama she yearly unrolls before us. We are apt to tire of her garden colorings of leafage, as it remains with us all the season, but that of the fall emulates the fleeting rainbow and disappears while still the object of our admiration.

Why should those having places of ample size take a ride into the country in order to enjoy the autumn foliage? Make your own picture. Your own woods will tell you what to plant, or, if you do not wish to consult them, peruse the catalogues of the leading nurserymen, and choose the tulip tree, sugar and red maples, American white, red and scarlet oaks, American ash, sour gum (*Nyssa multiflora*), the sweet gum (*Liquidamber styracifolia*) and the sassafras;

and for shrubs, *Cornus paniculata*, choke berry, sumach, *Ribes aureum*, *Itea virginica*, *Cornus florida* (a small tree), and several forms of the wild rose, *Rosa nitida*, *R. humilis*, and *R. lucida*, *Spiraea prunifolia*, *Berberis Thunbergii*, and *Euonymus alata*. A group of witch hazel (*Hamamelis virginiana*) will give the yellow, either in its dying foliage or its November blooms. The crimson colored leaves of the Virginia creeper, up among the yellow foliage of the tulip tree or amid the multi-colored maples, produces a charming effect. The poison ivy is extremely brilliant but must be avoided, although one regrets it when noticing its deep crimson wreaths encircling tall trunks, and flaunting its vivid colors high among the branches.

If you have a roadway leading up to this color picture, line it with berry-bearing bushes, as an attractive approach in keeping with the scene beyond. In it plant the snowberry, sweetbriars, high-bush-cranberry, *Ribes alpinum*, the scarlet-berried elder, and here again may be placed the dwarf roses above mentioned, which are as showy in their fruit as in the coloring of their leaves.

While on the subject of fall coloring it may be well to remark that some maples seem to color well while those of similar species growing along side under the same conditions as far as can be observed, do not. Sometimes one branch or set of branches color while the balance of the tree remains normal. There is a tree here that for the six years I've watched it, colors only on one main branch. Why don't our nurserymen, who are as progressive as any class of business men, note such trees and graft or bud from them and thus in time be able to offer to the trade trees true to color.

In climates more congenial than this the Japanese maples, andromedas and others may be added to the list.

W. C. EGAN.

ABIES (PICBA) PINSAPO.

Some time ago when a friend and I were looking at a not over nice looking specimen of the Pinsapo fir, he told me that if ever I had the opportunity I would be repaid by looking at those at Mt. Vernon. Being in Washington towards the close of September I took the electric cars for Mt. Vernon, and I found what I had been told was quite correct. There are several of these beautiful trees there, and they are thriving fully as well as they do in England, which is saying a good deal, and much better than they do about Philadelphia. Several that I saw at Mt. Vernon were about 25 feet in height, and as perfect as could be. The growth left to itself, as had evidently been the case with these, is somewhat conical, much as it is in a Norway or Oriental spruce of natural growth. In England this evergreen is a great favorite.

In some local nurseries the Pinsapo seems to be the stock one to offer customers, as the Norway spruce is in many of our own. It is known there as the Spanish fir, its home being in Southern Spain. About Philadelphia this fir does not seem reliably hardy, and I cannot now recall to mind a single thriving specimen, though there are many trees of it to be seen.

It was something of a surprise to me to see this tree at Mt. Vernon, as there are but few trees or shrubs there not indigenous to it, and but very few evergreens of any kind. Probably the late John Saul, of Washington, may have had the furnishing of them. When they were planted they must have been rare in this

country. Mr. Saul was known for his love for rare trees, and many of those now common were first introduced by him.

While on the subject of firs I may add that the Crimean fir, *Nordmanniana*, is the best of all for general planting. It thrives splendidly everywhere excepting in the far southern states, and in stately growth and the rich green of its foliage far surpasses any other species. And better yet it transplants better than most all others. No matter how severe the winter may be the foliage comes through it showing the same rich foliage it had in the fall. When ordering a tree of it purchasers should stipulate that it has a good leader, otherwise it will be two or three years perhaps before a good one is formed, the growth going to the side shoots in the meantime.

Philadelphia. JOSEPH MEEHAN.

PREMATURE FALLING OF THE LEAVES.

Will you please tell me what is the matter and what I can do for my chestnut tree. For two years about the second week in July the leaves turn yellow and commence to drop off through the middle of the tree, around the trunk, and there are also a good many small branches that are dead up through the middle of the tree, while the outside leaves are green and remain on the tree. Our other chestnuts are strong and healthy. The bark seems to be sound and free from borers.

Michigan. W. B. M.

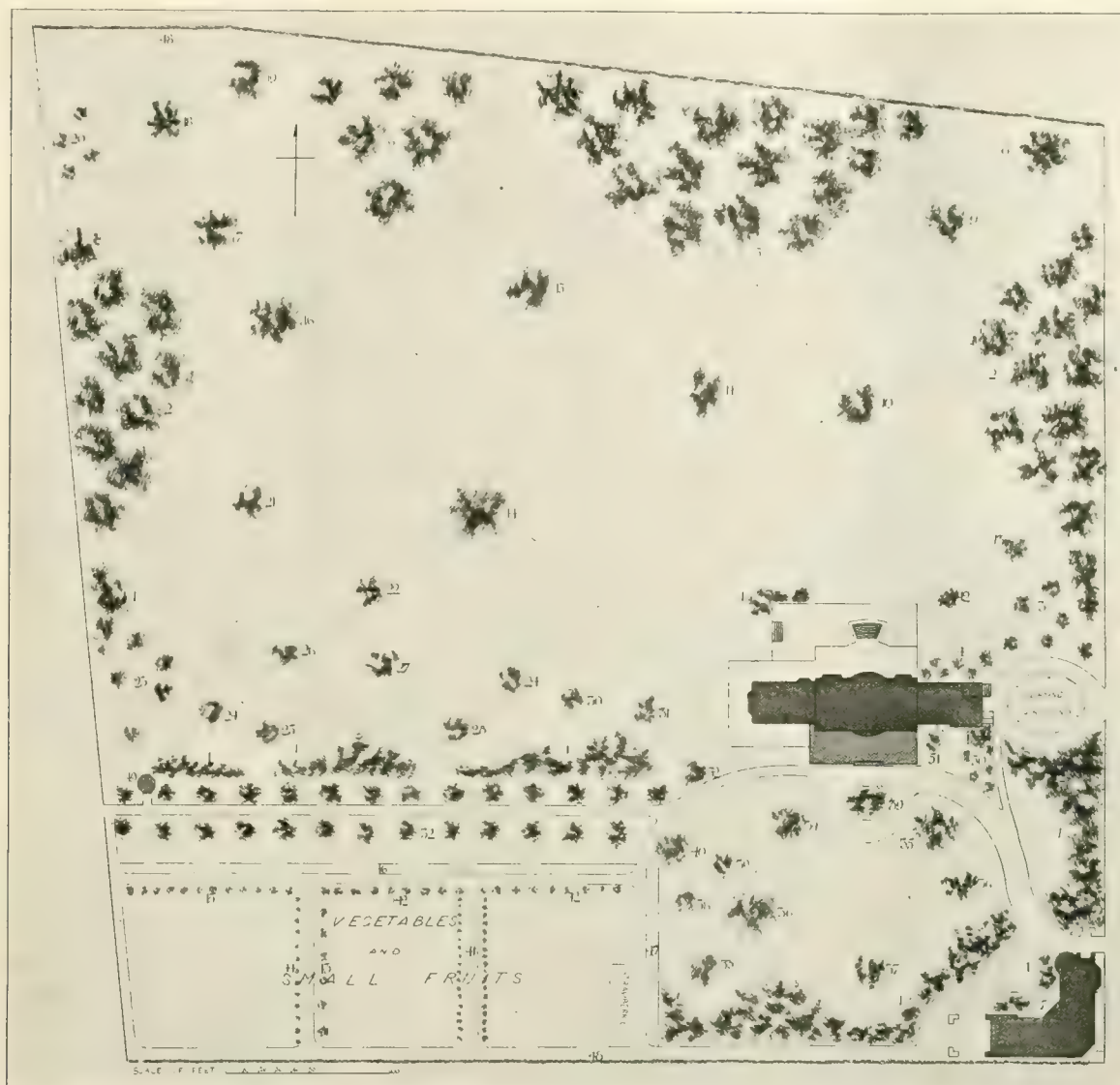
It is not possible to do more than suggest a cause in this case. It appears to be a case of early maturity of the foliage, but just what may bring it about may occur to you perhaps, being on the spot. It is not at all uncommon for pot plants to act in the same way when suffering for water. The leaves hastily and prematurely finish their work for the season. Should the plants receive supplies of water afterwards, the lower leaves fall quickly, the upper ones remaining green, acting much in the way you describe your chestnuts as doing. Is the tree likely to suffer from dryness at the root in midsummer?

Landscape Gardening.

PLAN FOR GROUNDS OF EIGHT ACRES.

The accompanying plan, made for the grounds of Mr. Leonard J. Busby, at Glen Cove, Long Island, shows a practical but very effective arrangement for a place of this size. With the exception of pasture, which is furnished elsewhere, all the needs of a suburban home are provided for. Ample space is reserved for vegetables, small fruits and an apple orchard. Study of the plan will show how the vegetable garden, usually an unsightly field of vegetables fully exposed to view from all parts of the ground and house, is here made a well ordered arrangement of fruit, flowers and vegetables and completely screened by plantings of shrubs and trees so arranged as to increase the beauty and apparent size of the lawn. Such a garden can be made most delightful and interesting and besides furnishing good things for the table will also give an abundant supply of cut flowers for the house, for the church and for friends.

The walks in such a garden can be made with gravel, cinders or any convenient material but the most effective walks are grass ones, that is walks made and kept as a lawn would be. Many objec-



PLAN FOR GROUNDS OF EIGHT ACRES.

tions are urged against grass walks, but in the gardens that I have made with grass walks they did not materialize. The principal objection urged against grass walks is that the ladies cannot use them when the dew is on the grass but this objection might be overcome by wearing overshoes.

An apple orchard in bloom is lovely beyond description, but after it is done blooming hardly any one will claim that an apple tree is a desirable one for the lawn and in summer and autumn falling fruit is a feature of untidiness. In the present plan the apple orchard is really a part of the garden and is screened from the lawn by massed plantings of shrubs. This orchard is so arranged as to provide shade for a walk known as the "Orchard Walk" leading in the direction of the beach. It is not the intention to keep the grass under the apple trees closely mown as the lawn will be. It is to be mown but once a season, about the first of July. By pursuing this plan thousands of spring flowering bulbs, such as daffodils, snowdrops, crocuses, scillas, wild tulips and alliums can be naturalized in the grass. This, one of the most delightful phases of gardening, is known as wild gardening, which has been most exhaustively treated and splendidly illustrated by that master of horticultural writers William

Robinson in his "Wild Gardening" a book I commend to the attention of all readers of GARDENING.

EXPLANATION OF PLAN.

1. 1. 1. 1. Massed planting of shrubbery with group of vigorous growing perennials.
2. 2. Groups of deciduous trees.
3. Groups of evergreens.
4. Specimen shrubs.
5. Group of deciduous trees with a few evergreens.
6. Group of large-growing evergreens.
7. Stable and gardener's house.
8. Oriental sycamore.
9. American elm.
10. English beech.
11. Tulip tree.
12. White birch.
13. *Magnolia macrophylla*.
14. Pin oak.
15. Silver maple.
16. Sugar maple.
17. Scarlet oak.
18. Tulip tree.
19. Wier's maple.
20. White dogwood and American judas trees.
21. White leaved linden.
22. Liquidamber.
23. Group of hemlock.

24. Cut-leaved birch.
25. Nordmann's fir.
26. Douglas' spruce.
27. *Virgilia lutea*.
28. *Magnolia conspicua*.
29. *Magnolia hypoleuca*.
30. *Magnolia soulangeana*.
31. *Magnolia conspicua*.
32. Apple trees.
33. Japanese crab apple.
34. Pin oak.
35. Scarlet maple.
36. Scarlet oak.
37. Fern-leaved beech.
38. *Magnolia stellata*.
39. Rose flowered weeping Japan cherry.
40. *Abies concolor*.
41. Grape-vines trained on trellises.
42. Dwarf pears.
43. Peaches.
44. Currants.
45. Dwarf pears.
46. Border for herbaceous plants, spring-flowering bulbs and annuals.
47. Border for hybrid perpetual roses.
48. 48. California privet hedge.
49. Pavilion.
50. Group of Japanese maples.
51. *Magnolia soulangeana*.
52. Tulip tree.

J. WILKINSON ELLIOTT
Pittsburg, Pa.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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WHEN planting *auratum* lilies this fall try wrapping them in sphagnum moss.

ONE OF THE most showy shrubs in the way of fall coloring in the woods surrounding Highland Park, Ills., is *Cornus paniculata*. The color might be called a dark maroon. While this shrub prefers damp situations and does better there than on drier ground, it is one of the few that show but little effect of the unusual drouth recently prevailing, even when on high, dry ground. Many other shrubs have lost their leaves or else retain them in a drooping manner, but those of this *cornus* are as firm and erect as in summer.

ONE OF THE finest blooming annual climbers of easy management when once established and warm weather has become assured, is *Thunbergia alata*. It has long been in cultivation, having been brought from South Africa in 1823. The flowers are tube-shaped, opening out broadly at the margins, spreading to nearly one inch and a quarter in diameter. There are two colors, one yellow and another white, both possessing a dark purple throat. It should be started from seeds sown in a hot bed or greenhouse and not planted out until there is absolutely no danger from frost. It will commence blooming early and continue until frost. Being a twiner it needs support and will before the season is over reach a height of some fifteen feet.

OF THE MANY forms of the tree hollyhock (*Althæa Syriacus*) the pure white large flowered variety known as *Totus alba* is the best. Too many of this species have a purple tinge that in their faded flowers possess what might be termed a dirty look, but the faded flowers of this variety possess no such characteristic. Other good forms are: Lady Stanley, variegated; Jeanne d' Arc, double white; Banner, double rosy pink striped; Pearl, double white, dark foliage; Enchantress, white shaded with rose. They, with the Chinese form and the new *Caryopteris mastacanthus*, give plenty of bloom among shrub life at the close of the season.

THE ENGLISH SPARROW is developing one good feature in his much abused character. At Highland Park, Ill., he is deserting the frequented streets, and congregating in vast numbers in the neighborhood of lawns where the wire grass, also known as crab grass, is plentiful. At this season of the year, where this grass is abundant and where the lawns have not been watered, its presence is readily noticed even at a distance by the large brown patches caused by the dying out of this grass, which is an annual. The unusual drouth of the past two months has kept the lawn grass proper, the blue grass, clover, etc., whose tops had been killed back by the crowding of the spreading crab-grass, from springing up, as is its custom when invigorated by the fall rains. Thus the space occupied by the crab grass is more plainly visible than customary. On these brown spots at different times of the day may be seen sparrows by the hundreds. They seem to confine their maneuverings entirely to these brown spots, and to be busily engaged in picking up something. There can be no question but that they are eating the seed of this grass. Let us all wish them hearty appetites.

Miscellaneous.

THE NASHVILLE EXPOSITION.

If the refinement of a people is to be measured by the flowers they cultivate then we have at the Tennessee Centennial Exposition at Nashville an index to the highest form of civilization, for of all the industries represented horticulture is most conspicuous.

Exposition park is a magnificent tract of highly improved blue grass land; it is delightfully elevated, shaded with trees of mature growth and watered by natural springs—strikingly adapted to the fancy of the landscape gardener. Mr. W. F. Joslyne, superintendent of the grounds, has ably proven his ability as an artist. The beautiful lakes have been constructed, walks planned, flower beds laid out, and the trees planted, in a way that happily unites beauty with utility. Greater diversity within the same space and with the same material is impossible, with every different view a new and entirely distinct plan presents itself, completely displacing everywhere, the idea of monotony.

Throughout the grounds there are 380 flower beds, comprising more than 16,000 roses, 30,000 cannas, 50,000 coleus, 50,000 alternantheras, 20,000 vincas, 4,000 geraniums, 2,000 tuberose, 2,000 caladiums and an endless variety of other plants in proportion.

A most impressive view of both land-

scape and floral gardening presents itself to the visitor immediately as he passes under the stately arches of the main entrance. One instinctively pauses by the old mill-wheel on the bridge that spans Lake Katherine, and admires the beautiful reflections from its placid bosom of the overhanging boughs and branches, and looks out with rapturous eye through the stately trees that stand like sentinels on her banks, to the magnificent grounds and buildings of the beautiful "new White City" appearing in the immediate distance. Reluctantly passing through the lovely woodland laden with the fragrance of the heliotrope and tuberose and afire with cannas and coleus, and bearing to the left, we come immediately in front of the Mexican Pavilion. Looking from here northward the brightest picture on the grounds is effectively brought in view. Here is a space of several acres, laid out and planted in a manner highly commendable. Just in front is a large triangle of 2-year roses by Messrs. Joy & Son, which has been a mass of bloom from early spring. To the right, canna beds by the Centennial Company are in the lead; to the left is a beautiful lawn interspersed with palms and rubber trees.

Taking the central walk to the juncture of the avenues leading from the Woman's, History, Auditorium and Government buildings, we find the stately electric fountain, within itself a unique and most imposing work of art and worthy centerpiece to the rivalling collections which surround it. In its middle and lower basins are water lilies shown by Mr. Moulder. Representatives of every color and species from every clime are presented in effect more striking than words can portray, and illustrates with force the ascendancy of water gardening, or systematic floriculture without the use of hoe or hose.

Around the fountain is a gorgeous flower bed, 200 feet in diameter; cut in sections by the walks. The mass of the plants are shown by Messrs. F. R. Pierson Co., Tarrytown-on-Hudson, N. Y., and consists of hydrangeas, palms, standard roses and similar bedding plants tastefully edged with coleus and achyranthes.

Leaving the fountain and looking to the right is a beautiful lawn extending down to the Auditorium and forward to the Gourd Arbor. In this are three large canna beds from 50 to 80 feet in diameter exhibited by F. R. Pierson Co. These together with the two large beds on either side of grape arbor and the numerous beds near the main entrance have made the Tennessee Centennial famous as the "Canna Exposition." Near the fountain in this section is a cactus bed 75 feet in diameter that contains some magnificent rare specimens, and like the water lilies just passed command applause from every passer by. Looking to the left is a large green lawn, bordered by 50 leading commercial varieties of roses from the Dingee & Conard Co. This is acknowledged the best bed of roses in variety on the grounds. To the front is the famous Gourd Arbor or Lover's Bower. Here the weary rest and the pensive dream under the mingled foliage of every variety of gourd known in the south. It is a delightful spot to every lover of comfort as well as every lover of romance, while to the "knightly gallant" and the "queen of coquetry" it has proven a sweet trysting place. "So Jonah was exceeding glad of the gourd" may be truly said of every weary pilgrim who enters here, and praiseworthy is the thought that suggested this cozy retreat.

Crossing Gourd Arbor, the grounds around the History Building meet our eyes. Quite a distinction between this and the beds we have just left, for about the fountain it is a massive array of crowded plants and competitive colors as if space were at greatest premium, while here the extensive green is sparsely dotted with modest beds of heliotropes, petunias, and such other things as are seen around a suburban or country home. On the lower side of the large lawn towards the auditorium is a fine bed of bananas and other tropical tall growing plants. On the upper lawn towards the Children's Building is a beautiful 75 ft. bed of cannas centered with ricinus and edged with caladiums. Back of the Woman's, Children's and Administration Buildings is an exquisite wooded lawn with chairs, swings and settees which prove a most inviting place through these long hot days.

From the main entrance of the Auditorium extends the Grape Arbor. It is covered with an endless variety of wild and cultivated vines, especially moon vines which are now in their glory, and in general appearance is not unlike Gourd Arbor. On both sides of this arbor is a large sward of green, in the center of each plot being a 100-ft. canna bed edged with caladiums shown by the Centennial Company.

The most striking display of tropical bedding plants is the exhibit of the Plant System of Railways in front of Railway Exhibits. It seems that half an acre of the most luxuriant variety garden in south Florida might have been dug out in a body and transplanted here. Cabbage palmettoes 20 ft. high waving with Spanish moss; magnificent palms, araucarias, jessamines, with numerous tropical foliage and flowering plants, never seen in the north, are growing in one luxuriant bouquet. Oranges, bananas, pineapples, lemons, guavas, Japan plums and other tropical and semi-tropical fruits are seen maturing as at home.

The Georgia Railroad also comes in with not only a magnificent display of flowers, but also the finest collection of evergreens on the grounds, as well as a beautiful collection of minerals. These displays are kept in a most commendable shape and are a loud speaking unwritten advertisement for the undeveloped south.

On the island in Lake Watauga, in front of the Negro Building is a flower bed worthy of notice. It is 200 ft. long, covering the whole island. In the center is a large showy bed of coleus, surmounted by a large urn of palms. Next is crotons, every variety known, together with several new ones never before exhibited, by odds the finest show on the grounds. Near the water are growing cannas, caladiums, typhas, callas and other sub-aquatic plants. All the plants on the island are exhibited by Mr. Joslyne.

Lily lake, near the Transportation Building, contains the water lily exhibits of Joy & Sons and Geo. B. Moulder. One or more specimens of every hardy water lily grown, together with *Victoria Regia* and other tropical sorts are furnishing thousands of their entrancing "lily pads" to attract the passing throngs.

If Mr. Joslyne, the gardener, prefers any place above the grounds around the History Building, it is his sun-ray bed at the southeast end of Forestry Building; 6,000 coleus arranged in the unique style which suggests the name, meet the admiration of all and proves the excellency of the gardeners' taste.

On Capital avenue the most attractive spot is the little grotto in front of Rialto. Wild flowers and ferns growing around

the cave spring, which feeds a miniature lake, for another exhibit of Mr. Moulder's water lilies, makes most appropriate environs for the lovely wood nymph which stands at the mouth of the grotto and in a shell is catching a drink from the dripping water.

In the state agricultural exhibit front of Agricultural Building, on a 4-acre farm may be seen growing every variety of Indian corn, wheat, sorghum, flax, hemp, jute, millet, clover, alfalfa, grasses for grazing and hay, and all other agricultural products common in Tennessee. Three-fourths of an acre is planted in tobacco. Uncle "Scott" Walker, a colored veteran tobacco grower, has shown the visitors how to grow and house the second crop of finest tobacco from the same patch. Uncle "Ned" Wood, an old cotton grower, has an acre white with the open pods of this crop, and says he never grew finer cotton in Georgia. Uncle "Ned" takes great pride in showing the visitors his large plants, some of which he declares have over 260 "squares and balls."

M.

THE ESTABLISHMENT OF PUBLIC PARKS.

The importance of bringing together information concerning the establishment of public parks cannot be illustrated to better advantage than it is in a little publication that has recently come to hand under the above title and relating to the New York park system, which was prepared by Gherardi Davis of New York and read before the Historical Society of that city.

After making a brief statement as to the necessity of public parks in cities and the desirability of guarding them against encroachments, he gives the history of the park movement in New York from the first suggestion that was made in a letter published in the New York Packet in 1785 and addressed to the mayor and aldermen of the city, calling attention to the fact that "there is not in this great city one proper spot where its inhabitants can enjoy with convenience the exercise that is necessary for health and amusement." He then goes on to give the history of Bowling Green, the Battery, and the various squares and parks of the city, from the time they were first suggested until they were acquired by the city and developed as public pleasure grounds, giving many interesting historical and other incidents connected therewith.

It is difficult for one unacquainted with such matters to realize the amount of careful investigation that is required to bring together and verify the facts and

interesting incidents related in this pamphlet. This pamphlet should be the forerunner of similar publications in other cities for the subject is well worthy of the careful investigation of students in local history, and such facts and incidents as are here brought together are not found in any other publications with the exception of the fragmentary and disconnected records in park reports and occasional newspaper and magazine articles.

There has never been made until very recently a systematic effort to bring together in any of the important libraries complete sets of park reports. Some park commissions even have not complete sets of their reports in their own offices, and almost every park commission is unable to supply many of the back numbers. The Park and Outdoor Art Association are bringing together as complete a set of park reports and other material relating to outdoor art as can be obtained. Information thus brought together will be of the greatest value to all persons who are interested in the park movement which has come to be such an important question in the development of American communities. WARREN H. MANNING.

HYPERICUM AUREUM.

Mr. Joseph Meehan's article on hypericum in your October 1 number is instructive and interesting. His remarks on *H. aureum* relative to its hardness is the cause of this note. I have had this shrub some five years and with the exception of a mulching at the roots which I give all shrubs, hardy and tender, in winter, it receives no protection. I consider it, next to *H. Moserianum*, the finest of its species. I can't leave the latter out over winter even under good protection if I desire to see it again, but *H. aureum* seems hardy even to the tips.

I consider it a very choice shrub. Its deep yellow flowers with their silken stamens are enhanced in beauty by the deep green leafage set immediately underneath them, partaking almost of the nature of bracts. This shrub comes from the Mountains of Tennessee, and is one that should be in all gardens.

W. C. EGAN.

CATALOGUES RECEIVED.

Siebrecht & Son, New Rochelle, N. Y., pot grown and layer strawberry plants; The Lovett Co., Little Silver, N. J., pot grown and layer strawberry plants, celery, cabbage and other plants; Ellwanger & Barry, Rochester, N. Y., pot grown strawberries; Fruitland Nurseries,

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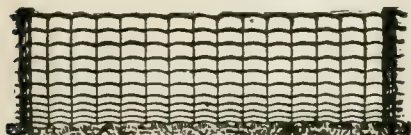
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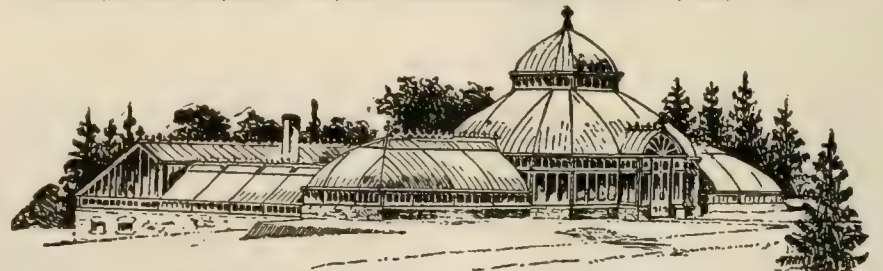
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THE GRECIAN FIR. (*Abies Cephalonica*).

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FIR TREES FOR THE GARDEN.

Fir trees are among the commonest fine evergreens in our gardens and many of them are very beautiful, especially in a young state. In a general way they look a good deal like spruce trees, but even the small boy can tell them apart when they begin to bear cones, the cones of the spruce trees always hang down, whereas the cones of fir trees always stick up when growing on the trees. The habit of the fir tree is pyramidal and symmetrical, and in the case of isolated or young trees they should be branched from the ground up and retain these lower branches for many years.

Our illustrations show two very beau-

tiful specimens of fir trees as they are growing at Dosoris; the photographs from which the engravings were made were taken two years ago. The Grecian fir (*Abies cephalonica*), a native of the mountains of Greece, is quite hardy on Long Island. Our illustration shows the handsomest and most perfect young specimen of it that we have ever seen; it is about 20 feet high and a little more than that in diameter of spread of branches. Its nature is dense growing. But we do not recommend this fir in regions whose winters are much more rigorous than about New York.

The Nordman fir (*Abies Nordmanni*), as shown in our other illustration, is also a Dosoris plant and an exceedingly handsome one, about 23 ft. high and same in diameter of spread of branches at base. Although a native of the Crimea it is a good deal harder than the Grecian fir (*A.*

cephalonica), and, withal a better all-purpose tree.

Now look at these two specimens as shown in the pictures: As garden trees they are models of health and symmetry, their lower branches lie flat on the ground and there isn't a gap in their make-up from the sod to the topmost tip, and they don't bear a mark of a knife or shears. Then look at the leader each one has, it is strong, straight and pronounced. Herein we find a lesson in tree culture. These trees are living examples, they are 20 ft. or over in height, and 20 years old, and by all the orthodox cultural laws they should now begin to lose their lower branches, but in fact there is nothing further from their intention, and why? Simply because we kept their heads cut down. To cut back the leader in fir trees of this size and age to most cultivators would seem madness, but it is just what we do

every year and our illustrations show what we accomplish by doing it. Were we to allow the leader to run at will it would soon shoot up far beyond the thick body of branches and form an ugly thing indeed, but every spring we cut it back to six ten or twelve inches of its base and allow it to throw up a fresh leader. We never have any trouble in getting good leaders. How can we reach up so high to cut the leader? By standing on a pair of high folding steps and using an extra long handled Waters' tree pruner.

If you want real pretty fir trees be sure to set out small plants—not over two feet in height—that are young, branched to the ground and perfect in every way. A misshapen young plant is apt to continue to be misshapen and a little plant that has lost its lower branches can never regain them in later years.

Fir trees as a rule like good, firm soil, and a little moist if practicable. In the neighborhood of cities, especially of smoky ones, neither they nor other conifers are apt to thrive well.

Among the more desirable fir trees for garden purposes are the following: The Colorado Mountain fir (*A. concolor*), and be sure it isn't the form from California as the latter is barely hardy here; it is one of our hardiest and most desirable. The Cilician fir (*A. cilicica*) from the Cilician Taurus; it has a contour not unlike Nordman's fir, but not so dense, and it starts earlier into growth than the latter. The Sachalin fir (*A. sachalinensis*) and Siberian fir (*A. siberica*) are a good deal alike, very pretty and hardy, and have a tendency to lose their lower branches in early life.

Veitch's silver fir (*A. Veitchii*) is a very beautiful evergreen with prominently white undersides to its leaves. Alas, it shows a tendency to dropping its lower branches early. This last tendency is also peculiar to *A. brachyphylla*, another Japanese silver fir of pronounced beauty. The Algerian fir (*A. numidica*) is one of the most distinct and beautiful of all, but unfortunately not reliably hardy much north of New York. It grows beautifully at Dosoris. It is indigenous to the mountains of southern Spain we have *A. pinsapo*, a rigid and select appearing species which behaves splendidly on Long Island, but would need shelter or protection if planted much farther north. The balsam fir (*A. balsamea*) abundant in the northern mountains of this country is pretty while it is small and young, but it is so hard to get middle-sized trees of it to hold their lower branches that we don't plant many of them now-a-days. The same, but in a lesser degree, may be urged against Fraser's fir (*A. Fraseri*) from the Carolina mountains.

The common silver fir tree (*A. pectinata*) of Europe accommodates itself very easily to this country but it hasn't the noble effect that Nordman's fir and some others have. Although *A. firma* is the common silver fir tree of Japan it never appealed to us with much favor as a garden plant; its growth isn't asymmetrical as we would wish. While the Columbian fir (*A. amabilis*) always made a fair growth with us at Dosoris, it got "burned" a little in winter and again in summer. *A. grandis* from California is very slow growing with us. Webb's fir (*A. Webbiana*), from the Himalayas, is too tender to consider. Low's fir (*A. Lowiana*), where it lives well thrives nicely, but it is not to be depended on.

WM. FALCONER.

DIMENSIONS OF TREES AT MATURITY.

I am planting a new place and endeavoring to lay it out myself. As I have always found GARDENING reliable in its information, and furthermore seemingly willing to reply to the inquiries of its patrons, I ask for information.

I had placed stakes where I had intended planting some trees, but am told by a professional that I am planting too closely—too near roadways and paths. I find out from this criticism that I am ignorant of the dimensions that most trees attain at maturity. Would you kindly give the dimensions attained by the heads of the accompanying list of trees, in say fifteen or twenty years, not telling how far apart to plant, but give size of heads.

Wisconsin.

Silver leaved maple, 35 ft.
Wier's cut-leaved maple, 30 ft.
Negundo maple, 20 ft.
Norway maple, 25 ft.
Schwedler's maple, 20 ft.
Sugar maple, 25 ft.
Ginnala maple, 12 ft.
Horse chestnut, 15 ft.
Ailantus, 25 ft.
Cut-leaved alder, 15 ft.
Weeping birch, 15 ft.
Cut-leaved birch, 15 ft.
Young's birch, 12 ft.
Catalpa speciosa, 20 ft.
Cerasus pennsylvanica, 15 ft.
Cerasus serotina, 20 ft.
Japan weeping rose flowered cherry, 12 ft.
Cercidiphyllum japonica, 15 ft.
Cercis canadensis, 15 ft.
Yellow wood, 15 ft.
European beech, 15 ft.
European weeping beech, 12 ft.
River's purple beech, 15 ft.
English weeping beech, 15 ft.
Kentucky coffee tree, 20 ft.
Koeleuteria paniculata, 12 ft.
American larch, 15 ft.
Weeping larch, 10 ft.
Tulip tree, 15 ft.
Platanus occidentalis, 25 ft.
Populus Bolleana, 10 ft.
Populus Van Geertii, 15 ft.
Golden hop, 8 ft.
Taxodium distichum, 10 ft.
Taxodium sinensis pendula, 6 ft.
American linden, 25 ft.
European linden, 15 ft.
American elm, 25 ft.
English elm, 20 ft.
Camperdown elm, 8 ft.

In compliance with our correspondent's request we have given what would probably be the dimensions of the heads in diameter in fifteen to twenty years, starting with trees of the ordinary planting sizes. A good deal depends on a tree being suited. A silver maple in a damp, deep situation would exceed 35 feet, and a sugar maple in a sandy moist place would make more than 25, but we think what has been given is about an average.

PLANTING A SCREEN.

I want to plant a line of small trees and shrubs or shrubs alone, say 8 or 10 feet in height at the back which shall serve as a protection for the rose garden situated on the south and as a screen for some fruit trees to be planted in the same quarter and at the same time present from the north as highly ornamental an appearance as possible. We are much troubled with high northwest winds, which it is needless to say, are not good for roses. The screen should be 19 feet long from fence to the walk next to the house, and may be not more than 12 feet thick in any part. What small trees or shrubs are best suited for such a place and purpose?

Evergreens have been suggested as a background, such as some of the retinosporas (*squarrosa* or *filifera*) or something of that sort, with perhaps viburnums (*plicatum*), and some of the spiraeas and deutzias. I find it almost impossible to

determine from any of the catalogues just what conifers are most suitable for the purpose. The catalogues, too, do not agree as to size, and not knowing the size it is not easy to determine what and how many to plant. Will you kindly suggest what it is best to use? Would any of the flowering crabs or almonds be at all suitable in such an arrangement?

Washington, D. C.

X.

We have much pleasure in presenting you with a list of evergreen and deciduous trees and shrubs from which you can select a suitable number for the purpose named. Among evergreens for the back ground are these: English laurel, *Retinospora pisifera aurea*, *R. plumosa* and *R. squarrosa*, *Taxus baccata*, *Thuja pyramidalis*, *T. filifolia*, *T. aurea*, and English holly.

Those of a medium size would be *Cephalotaxus Fortunei*, *Cupressus stricta viridis*, *Taxus hibernica* and *Euonymus japonicus*. For planting front, *Mahonia aquifolium*, *Podocarpus japonicus*, *Retinospora compacta*, *Thuja pumila* and *Andromeda japonica*.

Dividing deciduous shrubs the same way there is in the first division: *Cornus florida rubro*, flowering peach, Carolina buckthorn, *Deutzia scabra* and other tall growers, silver thorn, mock orange, *Syringa rubra insignis*, *Viburnum coccineum* and *V. Sieboldianum*. In the medium sized list: Japanese blood leaved maple, *Pyrus Parkmanii*, golden bell, hydrangea, *Lonicera Standishi*, *Spiraea Van Houtteii*, *Abelia rupestris*, *Syringa Emodi*, *Viburnum plicatum* and weigelas. For the front, *Cercis japonica*, *Magnolia stellata*, *Berberis Thunbergii*, *Callicarpa purpurea*, *Caryopteris mastacanthus*, *Pyrus arbutifolia*, *Rhus laciniata* and *Spiraea Bumalda*.

A selection from the above list would give you those to suit the clump you desire to form. The precise size each would attain if undisturbed is difficult to give, but a good gardener can easily make his plants suit their positions by using a pruning knife judiciously. You say you desire to plant them 8 to 10 feet in height at the back. You would find 4 to 6 feet a better size, allowing them to grow on to the larger size desired. The medium sized ones should be 3 to 4 feet and those in the front 2 to 3 feet.

It is always a difficult matter to advise what distance apart to plant such a collection as this. It takes too long a time to accomplish what is desired if the distance given is what will be required after many years. It is better to set them close enough to give results very soon, even if necessary to dig some of them out in after years. There should be three feet of space between the larger ones and two feet between those of lesser size, perhaps considerably more if too dense a screen is not desired.

Flowering crabs or almonds could be used. One has been included in the list, *Pyrus Parkmanii*, also a flowering peach.

NOTES FROM THE UNITED STATES BOTANIC GARDEN, WASHINGTON.

To the one living north of Washington, D. C. interested in horticulture, a visit to that city is always attended with a good deal of interest, because of the many trees and shrubs found thriving there which are not hardy at home. In some things the visit disappoints. The parks and public grounds are, many of them, getting old. The trees were all planted when the grounds were laid out and consequently, are, many of them, past their

NORDMANS FIR TREE (*Abies Nordmanniana*)

best days and are of kinds not as new as are to be found in parks more recently formed.

The Botanic Garden, under William R. Smith, always gives me pleasure. The grounds are pretty well filled up, but Mr. Smith is known as one who will not let his grounds lack a new plant if he can help it. Room is found for it somewhere. I merely "ran through his garden" on this occasion but had time to notice the *Sterculia platanifolia*, the Chinese parasol tree, thriving nicely. This only gets through a Philadelphia winter when somewhat protected. A large shrub 12 feet high by as many feet in width, *Vitex cannabifolia*, a native of Japan, was new to me. *Vitex Agnus-Castus* does well at home, but it gets a little nipped in winter. Evidently this one of the Botanic Garden does not. It has panicles of pale purple flowers.

Another new thing to me was *Zizyphus japonica*. *Zizyphus vulgaris* is not uncommon about Philadelphia. It bears reddish brown fruit, of about the size of marbles. This one, *japonica*, had long greenish looking fruit, somewhat of the shape of the acorn of the English oak. I tried to cajole Mr. Smith into promising me a few seeds, and with regret learned from him that it never perfected its seeds. The leaves are of a glossy green, and are larger than those of vulgaris.

Parrotia persica is a beautiful shrub, evergreen if I am not mistaken, and hardly considerably north of Washington. The late John Saul had some fine specimens of it about his home grounds some years

ago. The *Paliurus aculeatus*, the Christ Thorn, I was fortunate enough to see in flower. The flowers are small, yellow, in little tufts, the seeds being like small, flattened bells. Handsome plants of the rare Japanese trees *Idesia polycarpa* and *Hovenia dulcis* were a pleasure to see. The hovenia was as full of clusters of black fruit as it could be. If I mistake not the first trees of this to fruit in this country were those in this garden, though the late Mr. Brackenridge, of Govans-town, Md., had them a good many years ago.

I noticed in the border of perennials the pretty native plant, *Conoclinium caelestinum*, a blue flowered ageratum-looking plant of much beauty. What a pleasure it is to walk through this garden and find everything conspicuously labeled! Those superintendents of grounds, and there are lots of them, who think the public do not care for names, are greatly mistaken. A park or garden to be what it should be, should have labels on all its trees, shrubs and plants.

JOSEPH MEEHAN.
Philadelphia.

PRETTY BERRIED TREES AND SHRUBS.

With the coming of October there is a great falling off in the display of flowers on trees and shrubs, but as compensation there is a rich display of ripened berries by many of them. I desire to call attention to some of the best. Between the handsome colored foliage of many others and the fruit of those I am about to mention, there is a good list to select from

for the making of a beautiful display in late fall.

Among trees the various magnolias are effective, though their fruit is mostly over in early October. *M. tripetala* is the most effective of all, its carmine colored pods attracting much attention. *M. macrophylla* does not take on such a deep color, neither does *M. grandiflora*, though being far from unattractive. The mountain ash, both European and native, have large clusters of bright colored berries, which last of good color until late in winter. I have seen them in February in as good condition as before freezing weather sets in.

Philodendron amurense is a good sized tree, having pinnate foliage, and in late fall large clusters of brownish black berries. Our native holly and the English have their berries well matured by the middle of October. In several of the parks of Washington are fine large bushes of the English holly, both in its normal form and in its variety *lauriolia*. *Laurifolia* is a variety having almost no spines, and it is thought to be rather hardier than the common one.

The deciduous holly, *Prinos verticillatus*, as well as other species such as *decidua*, *monticola* and *ambigua*, are all of great value. Their red berries are perfect until hard continuous freezings occur, when they lose their color. There is a handsome native shrub, *Lindera Benzoin*, which could be used more than it is. In early spring there are numbers of small yellow flowers. All the season the leaves and shoots if bruised give off a pleasant odor, and now, in late autumn, it is decorated with scarlet berries. And it makes a handsome, large shrub as well.

The old and valued *Crataegus pyracantha* has yellowish red fruit, in clusters, which maintains its color all through the winter. In Europe this and many cotoneasters are trained to low walls, which they greatly adorn when the fruit is ripe. There are many cotoneasters, all bearing numerous red berries and all seemingly quite hardy with us. They are evergreen or nearly so.

If the Irish yew would but fruit every year as it has done this I would quickly place it among the ornamental fruited evergreens. I have never seen them as they are this year. The orange yellow berries are beautiful amidst the dark green foliage.

Hawthorns add a good deal to the general display. The English, *oxyacantha*, and the two natives, *coccinea* and *cordata*, are the best. The berries of the English are of a bright red, so are those of *coccinea* and besides this, the fruit of the latter are as large as the wild crab. *Cordata* has small berries, which ripen late. The clusters are large. The cock spur thorn, *crus-galli*, fruits good enough, but there is not much color to it. In the berry list the three of most merit are *Thunbergii*, *vulgaris* and *purpurea*. All have red berries, those of *Thunbergii* the most conspicuous and the most lasting.

Among roses there are a great many to select from. All single flowered ones bear red fruit. The Japanese, *rugosa*, the several native sorts, the sweet briar and the dog rose of Europe, with many of the more recently introduced sorts are on the list.

There are three sumachs, *Rhus copallina*, *R. glabra* and *R. typhina*, which while not bearing berries, display large scarlet "cones" of seeds, which make a brilliant display. And were I speaking of foliage now I would say that on all three of them it is now of a flaming scarlet.

Old, but beautiful yet, are the red and

the white snowberry, *symphoricarpos*. The arching shoots of the red, freely supplied with its fruit, make excellent material for the filling of vases. There are two dwarf pyrus, *arbutifolia*, with red berries, and *melanocarpa*, with black ones, which are as ornamental bushes as one could wish for.

Eleagnus umbellata is the late fruiting silver thorn. Its fruit is just ripe now, long after all other species have passed by. The mottled red berries are thickly

that do not change at all, but keep up their rich green foliage unchanged in spite of freezings and winter storms. I think there are others like me who are pleased to see bright green leaves in winter, and I propose to name a few of the shrubs and trees that bear them. I recall just now about a dozen of this description.

Readers will bear in mind that I am writing of what is to be seen in this vicinity. Some of the kinds I have in mind may not be hardy farther north than

respect it is quite different from the eastern arbor-vitæ, *occidentalis*, which becomes of a quite brown color on the approach of cold weather. *Gigantea*, besides having lively green foliage, forms a rather heavier tree than the other. There is no trouble with it here from lack of hardiness.

Yews give great satisfaction to all that use them. I do not know of any of them that are not hardy. But the English and its many varieties are the best for color. This is *Taxus baccata* and its varieties *stricta* and *hibernica*. Sometimes the sun will scorch the southern side of the *hibernica* in late winter. Planting it where it gets shade in winter insures the preservation of its deep green color all the year through.

Cephalotaxus Fortunei has much of a yew look about it, excepting that it forms a more bush-like growth. It is a most valuable evergreen, and true to its color at all times.

Podocarpus japonicus forms an erect, yew-like bush, and its foliage is of the dark green order. When of some size and seen from a little distance it reminds one very much of the Irish yew.

I hope GARDENING readers won't think I have forgotten myself when I mention English holly. It is so common to be told by neighbors that they cannot grow it. I can only say I can, and so can others in Philadelphia. It needs shelter from winds and hot sun, and a mulching to keep out frost from the root in winter, then it succeeds. Its lovely green foliage is worth some trouble to have.

Mahonia japonica is one of the best of small shrubs, the light green color keeping up all winter; and there is its dormant panicle of flowers showing all the time, waiting for the warm spring days to come.

There is no shrub with as beautiful green foliage as the old *Euonymus japonicus*, but though hardy enough in the shade with us, it cannot be depended on in the full sun.

I will conclude by mentioning some of the buxus, or box. The one used for edgings is not always of good color when allowed to become a bush, neither is *arborescens*, the common tree box. But it is different with a Japanese one, called *rotundifolia*. This is of a pretty green all the time, and it has larger leaves than common. And how manure does help keep up its color, as, indeed, it does that of all evergreens. JOSEPH MEEHAN.

Philadelphia.

The Flower Garden.

EREMURUS ROBUSTUS.

This noble bulbous plant is as yet quite rare in our gardens, but it is one that all lovers of choice and beautiful flowers should have. It has proved quite hardy in the cottage garden at Mahwah, N. J., where it has grown and flowered the past two years. The illustration gives a fair idea of how the plant looks when in flower, although it scarcely does the subject justice.

This is not a new plant but one of those real good things which seem to be omitted from our gardens. In a letter from Mr. Falconer last June, in speaking about *Eremurus robustus* he tells me it is just 19 years since he first flowered this plant at the Botanical Garden in Cambridge, and he says it was grand.

This plant is a native of Turkestan and this spring came in flower the 20th of



EREMURUS ROBUSTUS.

clustered along the stems. The foliage, too, is pretty as is that of all silver thorns.

I will close the list of shrubs with *Calli-carpa purpurea*. Its slender arching branches are thickly clustered with lovely violet colored berries.

There are two vines I would like to mention before closing, the *Celastrus scandens* and the *Lycium Chinense*. Both are decorated with scarlet fruit, and they keep up the display for a long while. Two other species of *celastrus*, *punctatus* and *articulatus*, are equally as good as the other if not better.

Philadelphia. JOSEPH MEEHAN.

GREEN FOLIAGED EVERGREENS IN WINTER.

I am frequently asked to recommend a number of evergreens which change in winter to colors differing from their summer attire. There are a great many evergreens of this description, and there is many a place on a lawn which they fill nicely. But to me, among so many that change color, some to pretty shades and others not, it always affords great pleasure to look on some

this, but wherever they would stand the winters the foliage would keep green.

Probably the best of all, because that hardiness goes with it, is the Nordmann's fir (*Picea Nordmanniana*). This noble evergreen is always a pleasure to look on. No matter how severe the winter, the beautiful deep green of the foliage is there when spring comes. It seems defiant of all kinds of weather, and it is certainly entitled to a first place among large growing evergreens.

The Lawson's cypress (*Cupressus Lawsoniana*) is unrivalled in the deep green of its foliage. And then how very pretty is its somewhat conical habit of growth and its drooping branchlets! I remember that some twenty years ago this fine evergreen was deemed tender hereabouts. I can say now that for ten years or more, or dozens of specimens unprotected, not one has been injured in all that time. A variety of the last named, called *stricta viridis*, possesses all the good qualities of the parent. Its growth is of stiff, upright character, quite distinct and meritorious.

Another evergreen of the deepest green all the time is the arbor-vitæ from the Pacific coast, *Thuja gigantea*. In this



A BACK-YARD GARDEN IN COLORADO.

May. It begins to grow very early and can be seen forcing its shoots through the frozen ground; at this stage of its growth great care has to be taken that the tender flower spike does not get frozen, as the water stands in the heart of the plant, but this seems to do it no harm as long as the water don't freeze. We use a bell-glass to protect ours and when the plant gets too large for this we use a barrel until all danger of frost is over.

It likes a well drained soil but plenty of water should be given in its growing season, which is from early in spring till July; it then goes to rest for the season and no more water should be given. Each plant should have a strong stake to support the tall flower stalk, as it is liable to be broken by the winds. The flower stalk grows to a height of six to eight feet and on its summit a dense raceme of peach colored flowers nearly two inches across. It lasts in flower for some time as the flowers do not open all at once. We notice that most of the working roots are near the surface, hence no other plants should be planted among them as the roots are liable to be injured. A mulch of rotted manure in the early spring will help them, and good protection should be given in winter. Something should also be provided to shed the rains. Any little nursing you may give them you will be well repaid, for when they are in flower you will find them to be one of the most beautiful and stately plants you have in your garden.

Pittsburg, Pa.

DAVID FRASER.

A BACK-YARD GARDEN.

We illustrate in this number a back-yard garden belonging to Dr. Howard E. Gates, Colorado Springs, Colo. No one

can look at this picture without remembering Alfred Austin's charming expression "The moment I enter a garden I know at once whether it is the owner's garden, or the gardener's garden. Nearly all large and costly gardens are gardener's gardens and on my part I would not take them as a gift." It is easily seen that this plot of ground receives the personal care of its owners, who tend to it with loving interest, and whose attentions are amply repaid by the wealth of bloom it produces.

Here in a climate where the hot dry sun burns the petals of gladioli and other flowers so that it is necessary to fasten cheese cloth over them at times, and where unusual care is required in watering, we find a spot that otherwise would be bare and unsightly, "blossoming like the rose." Why is this? It is because the owner possesses a love for the inmates of his garden, and attends to them personally. Any one having a plot of ground at their command can have the same luxuriance of growth in it, the same healthful out-door pleasure that this gentleman evidently enjoys in the care and maintenance of his garden, if they so desire. A few seeds, a small outlay for perennials, a spade and weeding tools, a little patience and energy and a desire to do, all backed by a love for it, will soon produce a floral mine whose dividends can be depended upon.

The illustration shows about one-fifth of the entire garden. Here, *Rudbeckia Golden Glow*, a moisture loving plant that under ordinary care attains a height of about six feet, grows nearly ten feet, requiring the lady picking its flowers to use an eight foot step ladder. If every back yard in this great country of ours

were like this one our nation would be a much happier one.

DAHLIAS AND COSMOS.

The absence of frost at Egandale up to the present time, October 15, has given us an opportunity of enjoying the cosmos and dahlias. So far all the "early blooming cosmos" I have tried have been failures. The flowers come early enough, but the stems are devoid of the thickly-set, feathery foliage that is so attractive in the old style. They are like the regular cosmos after it has been taken into the greenhouse before the frosts, where the flower stems run up for light, and where the same amount of foliage intended under natural conditions to clothe the four inches of stem, is made to clothe ten. Plants of the regular cosmos grown in 8-inch pots and kept severely pinched back until the middle of August, are now quite decorative for porch uses.

In no preceding year have the dahlias been so fine. Last spring I read Mr. Lawrence K. Peacock's book entitled "The Dahlia." It inspired a desire to try again a flower that Jack Frost had so many times destroyed for me just as they were about to fulfill the promises their buds implied. I became interested in the type known as "Decorative cactus dahlias" and procured some varieties representing about all the range of colors, and should they never bloom again they have repaid for themselves many times over in the wealth of bloom they have so far given. I give below the names of the varieties I am growing, any of which may be chosen by amateurs with a feeling that they will get something choice: *Nymphaea*, *Countess of Pembroke*, *Mrs.*

E. C. Monroe, Minerva, Black Prince, True model, Red and Black, Mrs. Geo. Reed, Evadine, Mrs. W. H. Maule, Clifford W. Bruton, Henry Patrick, Henry F. Michell, Wm. Agnew, Marchioness of Butte, Princess Harry, Grand Duke Alexis, Little Cactus. W. C. EGAN.

IPOMÆA "HEAVENLY BLUE."

Sometime ago I wrote of my failure during the summer of 1896 to bloom *Ipomæa* 'Heavenly Blue.' The vine ran all to foliage. A lady noticing my bloomless vines told me that in a window box at her home, with other plants, it bloomed freely. Soil impoverished by the crowded contents of the box, together with root restriction, evidently caused the blooming. Acting upon that theory I this year planted in 6-inch pots and sunk the pots in the soil. Subsequent events showed that they ran their roots through the opening at the bottom of the pot, and again grew vigorously, but did not bloom.

About the 25th of September, being short of pots, my gardener removed those containing these *ipomæas*, and being torn up on account of some recent improvements in that quarter, he left the ball of soil containing the roots on top of the ground fully exposed to the sun. The tops of most of them remained up among the other morning glories. Soon the Heavenly Blue began to materialize and in less than a week the vine began to bloom, increasing in number of flowers until within a few days (October 15) when their number is lessening. One plant, where the vine had been cut near the pot, commenced to bloom soon after and continued for nearly two weeks. Next year they shall be planted in a small box set upon the ground, some trailing plant being their companion in order to hide the box from inquisitive visitors.

W. C. EGAN

CUTTING BACK CLEMATIS.

In an issue of GARDENING I read, "All clematis are cut to within a foot of the ground in the fall." May I ask if, in this statement you include the *Clematis paniculata*? I purchased a three year old plant of this variety last spring and it has reached the top of my veranda. In replying to my request for information as to its culture, Mr. Dreer of Philadelphia, from whom I purchased it, wrote me that "it requires but little trimming, only when it gets too thick it might be trimmed in a little like honeysuckle;" but having seen your article in GARDENING I am puzzled and moved to ask if you include *paniculata* in your sweeping rule? If cut down as your rule requires, could it annually reproduce wood enough to cover the veranda as Mr. Dreer says it should do?

D. W.

Where the climate is not cold enough in winter to freeze back the wood of those varieties of clematis which bloom on the current year's growth, to which class *C. paniculata* belongs, it is merely a question of taste as to whether the plant is cut back or not. The variety in question if allowed to retain its old wood, has a tendency to become bare of foliage at the base, which cutting back somewhat prevents. Strong plants that have been cut back when established, well watered and in good soil, will readily grow fifteen feet in a season, and give foliage from the ground up.

Did you keep your sweet peas, dianthus and other flowering plants well picked of flowers? The production of seed

by a plant, draws strongly upon its vitality. Azaleas and rhododendrons bloom much more freely if the seeds are not allowed to form. Double-flowered varieties of the annual larkspur (*delphinium*) that bear no seed have become perennial.

Roses.

WINTERING CRIMSON RAMBLER ROSE.

Have two fine plants of the Crimson Rambler rose and as they are very large and have twined around some fencing it will be a difficult matter to take them down. What would you advise me to do? If they will stand the winter without being taken down and covered would prefer leaving them as they are. We have a temperature that seldom goes below ten degrees below zero, but on some rare occasions it has been as low as eighteen degrees below.

Schenectady, N. Y.

L. W. C.

The chances are that the rose will go through the winter uninjured to any great extent. The fence around which they have twined will protect them somewhat. If it is a solid board fence facing south, a hot sun beating against the fence and reflecting on the vine in winter will injure it, or at least the chances are that it will. Perhaps the situation is such that any light vine, old pea vines, thunbergia vines, or any open material that will not mat together, may be put up against the rose. Urlaps may be placed over it; if so it is better to have it stand out from the rose so when wet it will not freeze and thaw against the wood.

The Crimson Rambler may be called hardy in ordinary exposures, but in a bleak wind swept place it may winter-kill. It is the late growing unripened tips that are apt to be injured. It is well to pinch out the extreme tips late in September. This retards further growth and hastens the ripening of the wood, especially if some of the leaves near the top are picked off, the object being to let in the light. Where the growth is not bushy enough to shade the new wood near the tips the leaves need not be plucked. If covered, don't be in a hurry. Ordinarily from the 10th to the 15th of December is early enough. More damage is usually done after the 1st of February than before.

ROSES HARDY IN MINNESOTA.

Please give a list of absolutely hardy roses of all kinds that will winter without protection in the vicinity of St. Paul. Are the new hybrid Sweet Briars and *R. Wichuraiana* sufficiently hardy to meet above conditions?

A. J. W.

You have propounded a question very difficult to answer. If by "absolutely hardy roses," you mean a rose that may be planted without regard to situation or shelter, then we know of none, except possibly the wild prairie rose, and even then nature kindly throws some protection about them, as they are found to flourish best under the shelter of a hill, or when screened by brush or shrubby plants.

In June roses, we find the Harrison's Yellow perfectly hardy, Madame Plantier very nearly so, and Magna Charta next. In Prairie roses, the Queen of the Prairies and the Gem of the Queen's head the list. In H. P. roses, our experience would dic-

tate the following order: Paul Neyron, hardiest, most vigorous grower, and greatest bloomer; General Jacqueminot, Anne de Diesbach, John Hopper, Mrs. John Laing, and Fisher Holmes, in the order named. The Sweet Briar is hardy here if in a sheltered location, but is not long lived. We have grown many of the Scotch roses of the *rugosa* family for the past five years, and now have the *rugosa alba*, *rugosa rubra* and *Rugosa rosea*. All of these have proven perfectly hardy with us, requiring no protection other than that afforded by a shelter belt of evergreens.

In conclusion we would not advise any one to attempt the culture of roses in this latitude who is not prepared to give them reasonable shelter and protection, else disappointment and failure will result. With many varieties a sheltered position alone will answer, but with others—the H. P. roses in particular—protection in the form of winter covering is advisable. This need not require much labor or expense, but is more a question of attention at the proper time. Our practice is to remove the old wood late in the fall, and bend down the branches to the earth, covering the plant entirely with earth, leaves, or litter, as may be most convenient. A moderate covering will answer the purpose, and the time spent will be amply rewarded with the increased bloom and vigor of the plants, even with the roses we esteem most hardy, or indeed, those classed as "absolutely hardy." We grow and sell over 10,000 rose bushes every year, and we find protection (varied to suit varieties) pays. Our experience with the *Wichuraiana*, or hybrid Sweet Briar roses, is too limited to warrant the expression of an opinion.

THE JEWELL NURSERY CO.

Lake City, Minn.

Aquatics.

KEEPING TENDER AQUATICS OVER WINTER.

Please tell me how I can keep over winter the plants of *Nymphaea zanzibarensis azurea*, without a greenhouse. I have a dry cellar in which a furnace fire is built once a week, where my bulbs and roots keep perfectly.

I also have in my water garden, which consists of cement tanks, large numbers of seedlings of the *nymphaea* above mentioned. Can I keep them over to advantage?

The tank (4 by 8 feet in size) in which I grow my lotus has been planted five years. This year I have only two or three blossoms. Should I take up the roots and replant some of them? And if that would be the best plan, should it be done in the spring? I followed this plan with my hardy *nymphaeas* last spring greatly to my advantage, putting the extra roots in a pond near by, from which I get many lovely lilies for gathering.

K. H.

New York.

As to wintering *Nymphaea zanzibarensis azurea* will say that I have not succeeded in keeping through the winter the old bulbs of plants that have grown all summer, as they make a large growth for the season, but the old plants usually form one or two smaller new bulbs at the base of the old one; these I take off and put in small pots, keeping in water tank with a temperature of 60° till February,

BLOSSOMS AND BERRIES OF THE COFFEE TREE (*Coffea arabica*).

when I raise the heat to 65° or 70°, whereupon they start growing. This gives good plants for setting out.

It is very likely that the bulbs can be kept in damp sand in a cellar at a temperature of 60°, but in such a case it would be necessary to transfer them in February or March to a tank at temperature of 65° or 70° to make growth for planting out.

If the seedlings have formed bulbs strong enough they may be wintered as directed above for the large plants. If not they could not be kept through the winter without a tank.

As regards the lotus I believe that they should be shifted to a new position at least every third year. Early in spring is the best time to do this safely.

C. J. STROMBACK.

Lincoln Park, Chicago.

The Coffee Tree.

COFFEA ARABICA.

Undoubtedly this beautiful illustration of the flowers of the plant that produces the coffee of commerce will be interesting to many readers of GARDENING. The common name "coffee" is the name of a province of Narea in Africa where the ordinary form grows in abundance, and has been latinized into *coffea* as its botanical appellation.

There are at least four known species all bearing white sweet-scented flowers. The one chiefly used in commerce is *Coffea arabica*, indigenous to the mountain

regions of southwest Abyssinia, and has been known since 1696. It is a shrub growing from five to fifteen feet high. The manner of its cultivation and the subsequent treatment of the berry is given in the following extract from a letter written by a gentleman who is thoroughly familiar with its culture in India.

The young plantation is laid out neatly and regularly in rectangular lines under "shade trees," which are most essential for the young plants well-doing, guarding and protecting them from the stormy blast and scorching sun and wind. The planting is done when the "monsoon bursts" in June. For the first three years the planter watches over and cares for these young plants, putting in fresh ones should any die off. The third year he is rewarded for all his labor and care by the "virgin crop," and if the "blossoming showers" which fall in April are propitious, we see a lovely sight when we get up one fine morning, just like a fresh fall of snow!—a vast sheet of pure white blossom, relieved by the glossy dark-green leaves, truly a sight worth seeing! The air is heavy with perfume, so strong that many people cannot endure it; but the perfume does not last long, for the flowers are very short lived, and the second day sees them discolored and withering. When the flower falls off, you can notice small berries showing up; the rain and warm sun makes them swell and get larger and larger, till they become about the size of cherries. This takes about seven or eight months, to November, and the berries, now a bright red, are ripe.

All hands are now put on to pick, women and boys are considered the best for this work, and soon the "pulp-house" is a scene of life. The day is spent in picking—more picked, more money to be earned by the laborers. At the end of the day, they come trooping in, a lively chattering set, with their baskets full of the crimson fruit; this is all measured in by the "maistry," or head man, the "durai" (master) superintending. It then goes through the process of pulping; a man takes his seat on the "cherry-loft," and through an aperture lets the berries gradually go pouring into the "pulper" below. In this way the outer red skin is taken off and thrown to one side, while the coffee runs along wooden channels into large vats. After twenty-four hours' fermentation, it is washed, by coolies trampling and raking it to

remove the mucilage covering the bean. The "parchment," as the coffee is now called, is removed and spread out on tables to dry.

When partially dried, it is despatched in carts to the "curing works" for final treatment. After being unloaded, it is spread out on the "barbecues" to thoroughly dry. It then goes to the "peeling-mill," to remove the dry, parchment-like skin; then it passes through the "fanners," "sizers" and "separators." The beans are delivered into boxes showing the different sizes of "flats" and "peas" (flat and round coffee). This completes the work done by machinery. Now the coffee goes to the "garbling room," where it is measured out to women, a bushel to each. Every bean is handled, and all that are discolored, broken, or faulty in any way, are thrown out, and go under the name of "Triage." The coffee is now ready for packing; this is done in double sacks, each one containing 1½ cwt. net. The bags are branded with the estate's name, also the class of coffee. This is carted or railed to the nearest coast-port for shipment to foreign parts.

The Greenhouse.

RULES FOR VENTILATION.

A subscriber sends the following question: "What are the best rules for the ventilation of a greenhouse?"

There is one rule more positive than all the rest, which can be called common sense, and it may be called the instinct of a good gardener. Ventilation, or "giving air" as it is technically called by the greenhouse men, is done for two reasons. In hot weather all the ventilation possible is given to let out the atmosphere that has been heated by the rays of the sun to an unhealthy degree. In moderate weather a little ventilation is given, not because the temperature of the house is too warm but to make a better circula-

tion of air, or really to renew it as often as possible. I used the word "instinct" above because however good a rule and authority you may follow in giving ventilation it must be largely seasoned and governed by your own judgment. For instance, you may learn from a writer on roses that when the thermometer in the house goes above 70° you should give air; now, that is good advice providing it is a still day and not too cold, but if there is a keen cold wind blowing it would be better to let the house run up to 80° rather than raise the ventilators. Again, in October or November the house may be only 60° and the thermometer outside 50° and no sunshine; on such a day as that fire heat should raise the temperature of the house to 70° and a little ventilation should be given.

The above remarks are meant only for a rose house, but for other plants the same rule will apply, only differing in de-

The Window Garden.

FERNS FOR THE WINDOW GARDEN.

A few ferns are always a most welcome addition to the window garden, and add a grace to its arrangement that cannot otherwise be furnished, but the dry atmosphere of a dwelling is a very trying condition to most of the members of this family of plants, and consequently the list of species adapted to this use is not a long one. If confined to one species of fern for house culture, probably the most satisfactory choice would be one of the sword ferns or *nephrolepis*, of which there are altogether about a dozen species known to botanists.

Out of this number there are three or four that are very satisfactory in the house, providing they are given reasonable care. Among these *N. exaltata* is one

the house is as follows: Take a pot or jardiniere about two inches larger than the pot containing the fern, then slip the latter into the larger pot and fill up the space between the two pots with sphagnum moss. By keeping the moss damp continually the fern pot will very seldom need watering, and the roots will be protected from the drying effect of the surrounding atmosphere. Under this method specimens have been known to grow and improve for a series of years in a store window.

The aspidiums or shield ferns include some good species for the window garden their fronds enduring the dry air very well. Of these *A. aculeatum* and *A. angulare* are specially recommended, being moderately free in growth and forming a tuft of dark green fronds that are one to two feet long, the stems and the crown of the plant being more or less clothed with brownish chaffy scales. These shield



THE PARKS OF PATERSON, N. J

gree of temperature. The most perfect system of ventilation is one that enables you to give the smallest possible quantity when desired, which is in the winter months, and the largest quantity when needed, which of course is in spring and summer. Nearly all growers agree that ventilation at the ridge is the best, viz., in a 20-foot wide house the ventilating sash should be at least 2 feet deep from ridge and continuous the whole length. It should be hinged at the bottom of sash and open at the ridge. Side or bottom ventilation is for many plants most desirable in the summer months, particularly for carnations and chrysanthemums, but for roses it would not only be useless but an absolute injury; the draft caused by the current of air from bottom ventilator to top would soon cause mildew, but I must now stop or you will have a long chapter on ventilation. W. SCOTT.

There is no special book that I am aware of on ventilation connected either with carnation culture or any other. I know of no practical work on the carnation. L. L. Lamborn's book on the carnation is more of a prose poem on the dianthus family than a guide to the culture of the carnation. The most practical literature on the carnation is from the pens of the specialists who have contributed weekly articles to the florists' trade paper, for the past few years. W. S.

of the best, producing long and graceful fronds ranging from one to three feet in length, divided into narrow leaflets or pinnae, and dark green in color. This fern also grows well in the outdoor garden during the summer, when planted out in a shady place, and appreciates a well manured soil.

The Boston fern, of which much has been heard during the past two years, seems to be a form of the above species, but has longer and broader fronds and a more drooping habit, and often is lighter colored than the type, though the matter of color largely depends on the amount of shade the plant receives. It is, however, a very beautiful fern and succeeds admirably in the house, and under the cumbersome title of *Nephrolepis exaltata Bostoniensis* has been exhibited at various flower shows in elegant specimens fully six feet in diameter.

Where less space can be afforded for a sword fern I would suggest the use of *N. cordata compacta*, a much smaller plant than those already mentioned, and also flourishing under house treatment. As its name indicates this fern makes a very compact growth, the fronds being one to two feet high and nearly upright, and even in a 4-inch pot is a very attractive plant.

A plan that has been used with considerable success in growing sword ferns in

ferns are not hot house plants, and if the temperature of the room in which they are grown should go down to 45° or 50° on some cold night they would suffer no injury.

The maidenhairs in general are not entirely satisfactory for our purpose, in fact most of the species seem to go into a decline soon after they are transferred to the window garden, the fronds turning yellow or shriveling up, but occasionally some enthusiastic cultivator is rewarded by attaining a fair specimen of *Adiantum cuneatum*, the most commonly grown species, and the best for experimental purposes.

The pteris family furnishes several good house ferns, one of the best being a variegated form known as *P. cretica albo-lineata*, the fronds of which are divided into several smooth edged segments, each of these being ornamented with a band of whitish variegation through the center.

Another good species is the well known ribbon fern, *P. serrulata*, a very free grower with long, slender green leaflets of very graceful habit, and the crested form of this species, *P. serrulata cristata* also grows nicely under the same conditions.

P. cretica magnifica is another form in which the tips of the fronds are crested and is also a good house fern, and the



PARKS OF PATERSON, N. J.

strong growing *P. tremula* is sometimes seen in good condition in a window.

For the sake of variety one or two of the coarser leaved ferns should be included, and of these *Cyrtomium falcatum*, *Polypodium vulgare*, and *Aspidium aristatum* are among the most reliable, and all are distinct types.

For soil use rotted sod from a sandy pasture, with a moderate amount of old manure, and the results in most instances from the strong-growing kinds herein noted will be much better than from the leaf soil composts so often recommended for plants of this character. Give plenty of fresh air without exposing the ferns to cold draughts and above all never permit them to become dust dry. W. H. TAPLIN.

Parks.

THE PARKS OF PATERSON, N. J.

The public parks of Paterson, N. J., while limited in area as compared with the extensive reservations in some of the larger cities, are admirably located and their natural advantages and adaptability are unexcelled. Indeed but few cities of Paterson's size can boast an equally beautiful and picturesque public pleasure ground.

The park system is in two sections. Eastside Park consists of sixty acres, bounded on the east by the Passaic river.

It occupies a commanding situation, affording an unobstructed view of Bergen county with the Palisade Mountains in the distance. Looking westerly and southerly the view takes in Paterson and the territory lying between it and Passaic and the Oranges.

Westside Park contains thirty acres, also situated on the banks of the Passaic river which forms its southern boundary. The parks were purchased in March, 1888.

The falls of the Passaic, one of the loveliest bits of natural scenery, are situated in Paterson and are the admiration of every visitor. The city could not do a wiser act than to secure Passaic Falls and the adjacent territory as part of its park system.

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MESSRS. ELLWANGER & BARRY, Rochester, N. Y., were awarded six valuable medals for their display of fruit at the International Horticultural Exposition in Hamburg.

IN CLEANING your walks of snow the coming winter do not pack it along the edge of the grass. Either cart it away or throw it with the shovel here and there out on the lawn. When thrown immediately along side the walk it becomes packed, readily melts and again freezes, thus forming a frozen mass that excludes the air and badly kills back the grass.

SAVE ALL late falling hard wood leaves that are blown upon your lawn to use in protecting your plants. The early falling leaves generally belong to the soft wooded trees, and are not good for the purpose, rotting quickly or matting down and thus keeping out the needed air. Oak leaves are among the best. Use them to cover your perennials, laying brush over them to prevent the winds from blowing them away. Next spring pile them up in some out-of-the-way corner where they will rot, and become in a year or so good leaf mould. When half rotted they act as a splendid mulch to place over the roots of newly planted trees or shrubs, especially in clay soils that bake in the sun. They contain but little manurial value, because nearly all available plant food that was in them was assimilated by the trees that produced them, before the leaves ripened.

CHARLES A. DANA.

It was with heartfelt pain that we received the news on the 17th ult. of the death of Charles A. Dana, the owner of lovely Dosoris. His public life is familiar to all. We knew him at home. We knew him personally for about twenty years, and for over twelve years had charge of his country seat, Dosoris. Mr. Dana was an intellectual giant and a splendid specimen of physical manhood. His manner was magnetic, most cordial and kind, and to know him at home was to trust in and love him forever. No resident of Glen Cove ever had more friends or was more esteemed in the village than he.

His home life was most beautiful. He was very punctual in business matters and went to New York every day except Sunday, but when he left his city office he stopped work absolutely for the day, and came home for rest and recreation. He was extremely fond of children and all that was beautiful in nature, and he was an ardent lover of trees and flowers and fine landscape effects.

When he acquired Dosoris island about twenty-five years ago he at once set to improving it for his heart was in his home, and before long it advanced from a plain country place to a teeming museum of living plants of great value and merit, for every kind of tree, shrub, and other hardy plant obtainable and worth growing found a lodging at Dosoris, and greenhouse, fruit and vegetable gardening too were practiced in a manner unsurpassed anywhere.

We never knew a private gentleman who knew trees and plants generally better than did Mr. Dana; he knew their geography, history, adaptability and use, and there was an exceedingly warm place in his heart for intelligent horticulturists. Every year he took a vacation of two to three months which he devoted to travel in foreign lands—maybe Mexico, Syria, Egypt, Russia, Norway or Spain, but wherever he went he never omitted to visit the gardens, parks or forests of those countries, and his rare linguistic attainments fine presence and genial gentlemanly bearing seemed to at once open the hearts of men to this noble American, and his garden friends were everywhere. With great delight we used to listen to him as he told of the gardens he had visited, the trees and plants he had seen and the enthusiasts he had met, and intense was our interest as we used to unfold the little packages of seeds or sprays of blossoms that he emptied from his pockets after his return from a trip. These papers might contain seeds from the garden of Gethsemane, a cone picked from one of the old cedar trees on Mount Lebanon, some blossoms from a convent in Spain, or fern fronds from the Highlands of Scotland.

It was Mr. Dana who made GARDENING a possibility. Without Dosoris as an expert garden we would not have started the paper. He heartily approved of the publication and encouraged us in many ways. The lovely Dosoris pictures of the earlier volumes are incomparable for beauty, truth and merit, every one was a lesson in horticulture and they reflect pretty accurately the style of gardening Mr. Dana approved.

At his special request, with a few other garden friends, we revisited Dosoris on June 11 last, and although he was the same grand and hearty old gentleman as of yore and walked out among his favorite trees with us, he was not as well as usual, but it was far from the minds of

any of us that that was the last time we should see him alive.

Charles Anderson Dana was born at Hinsdale, N. H., August 8, 1819. In his death America has lost one of her greatest and noblest men, and horticulture a founder of what is most refined in gardening.

W. F.

CELASTRUS SCANDENS masquerades under various common names. Here it is known as the Climbing Bitter-Sweet, also as the Roxbury Wax-work, but abroad it is called David-root, Fever-twig and Staff Vine. The generic name is derived from *kelastros*, the old Greek name once applied to the privet, the specific name *scandens*, signifying climbing. The genus includes several species of non-climbing forms, one, *C. orixa*, from Japan, being quite ornamental. Prof. J. L. Budd, of the State Agricultural College, Iowa, has a form from Central Asia, *C. punctata*, that is said to be more showy in its fall berries than our native one. At this season a well placed vine of the Bitter-Sweet is very attractive. It takes kindly to cultivation, and delights in ample moisture. While it will grow in shade, it prefers full sunshine, in which position it will branch down low. It will send out drooping side branches some three feet long, which in the fall are loaded with large clusters of orange-crimson fruit with lighter colored capsules. The beauty of these is enhanced by the yellow tint the foliage assumes. It is strictly a twiner, and moreover an insidiously cruel one. Its soft wooded new shoot in time becomes tough and wiry, and often kills the young trees it embraces. Its habit of branching thickly all along its main stem when growing strongly, renders it peculiarly suitable for running up a tall, slender pole, where these drooping, slender, radiating branches can hang and sway unobstructed. It takes any transplanted plant some time to become well established and at its best. Too often wooden supports are used in a case like this, and in a few years, when the vine is fully at home and making its best effort to please us, some unruly north wind topples over the rotted support and our picture is ruined. We have gone to the expense of digging the hole, carting in good soil, bought our plant, and inserted our frail, short-lived wooden support, only to be in the end disappointed. Why not have put a little more money into the venture at the start and enjoyed success! Get a 2-inch iron gas pipe some eighteen or more feet long, and insert it in the soil fully three and a half feet deep, digging the hole for it with a post-hole auger, and tamping small stones or broken brick in at the bottom and up at least six inches. This helps to keep the pipe solid. Then plant your vine, which will soon reach the top. It is well, but not absolutely necessary, to have four cross-bars at the top coming out twelve inches from the pole, for the top of the vine to lay on. Paint the pipe when put up. We have a vine so supported which is now a picture. It is clothed from near the ground up to the top with drooping branches clothed in yellow and decked with the brightest of berries.

MULCH newly planted trees quite heavily. There is root action below frost line during winter that is storing up food for next season's growth. Established trees generally are below the frost line with some of their roots, but newly planted ones have not had time to get there. Mulching lessens the depth of the frost line and thus is apt to allow some of the roots to remain active.

Miscellaneous.

A LILY BULB DISEASE.

During the past year a destructive wave of fungoid disease almost completely ruined the crop of lily bulbs raised in Japan for exportation to Europe. The first indication of this disease received at Kew was through Messrs. Tozer Bros. & Co., of Gracechurch street, who sent a large number of diseased bulbs for examination. These bulbs formed part of a consignment received from Japan in November last, consisting of 848 cases, containing 73,050 bulbs of *Lilium speciosum* (Thun.), *album* and *rubrum*. Out of this number only 250 bulbs arrived in a saleable condition, the whole of the remainder being more or less rotten and worthless. At a later date the same firm received a second consignment of 37,000 very large bulbs of *Lilium auratum* and out of this quantity only 4,000 were saleable. Similarly diseased bulbs received from Japan were afterwards sent to Kew for examination from other sources. Finally a quantity of bulbs obtained through an agent from Japan, for planting at Kew, contained a large percentage suffering from the same type of disease. The bulbs received for investigation showed every stage of disease; in the earliest condition, the base of the bulb is alone discolored and somewhat soft; this discoloration and softening of the tissues gradually spread from the base, until finally, in the most advanced stage, every part of the bulb is of a brownish color, and sufficiently soft to admit of being readily crushed into a pulpy mass between the fingers.

Microscopic examination revealed the presence of slender, continuous, hyaline, branched hyphæ traversing the tissues in every direction; the cell-walls are never pierced, but gradually dissolved, and it is only at the last stage of the disease that the starch grains become irregularly corroded and gradually dissolved. So long as the epidermis of the bulb-scales remains intact there is no trace of mycelium or fructification on the surface, but when the tissue is reduced to a soft pulp, or when a diseased bulb is cut open, the broken surface is within twenty-four hours covered with a dense snow-white mycelium, which within three days becomes studded with numerous clusters of fruit, resembling the naked eye miniature pins with round black heads. The occurrence of this particular form of fungus on every bulb examined suggested that it might possibly be in some way associated with the disease, and subsequent cultures and inoculations proved this surmise to be correct. The fungus grows readily as a saprophyte the spores germinating and forming the characteristic superficial white flobose mycelium, which within a week bears an abundance of fruit, or such varied culture media as prune juice, sterilised potato, decoction of bulb scales, etc. In one experiment four spores were sown in a 5 per cent. solution of cane-sugar in water in a Petri dish, and at the end of six days the entire surface of the liquid was covered with the fungus in a fruiting condition. When spores were sown in a hanging-drop along with a very thin section of lily bulb-scale, it was observed that the germ-tubes could not enter the tissue through the epidermis, but that they entered readily at those points where the cells were not protected by the epidermis.

A set of experiments was also carried out, using healthy lily bulbs, some of

which were furnished by Messrs. Tozer, for inoculation. For the purpose of destroying stray fungus spores the bulbs were immersed for a quarter of an hour in a 1 per cent. solution of corrosive sublimate. The bulbs were afterwards placed in wide-mouthed flasks filled with sterilized tap-water containing a 5 per cent. solution of cane-sugar, the base of the bulb being immersed in the liquid; finally, the entire bulb was covered with a sheet of cotton wool soaked in a 1 per cent. solution of corrosive sublimate, the cotton wool being tied round the neck of the flask. When the roots were about an inch long an attempt at inoculation was made as follows: The numerous cultures of the fungus furnished a large supply of spores, which were tested and found to germinate readily. These spores were collected with a wet camel's-hair brush and washed off into a small amount of sterilised water in a flask until it became discolored by the quantity of spores present; this was the inoculating material. A quantity of this spore-carrying water was added to the water in which two of the bulbs were growing, care being taken not to injure the roots; the inoculating liquid was also deposited freely between the scales of the two bulbs, which were then covered with sterilized cotton wool as before. The water in which two other bulbs were growing was inoculated as above, but the roots of the bulbs were broken off. Finally, 1 per cent. of salicylic acid was added to the water in which two more bulbs were growing, a copious supply of the inoculating water added, the roots of the bulbs broken off, the bulbs replaced, and, as in the other instances, protected with cotton wool.

At the end of six weeks the two bulbs whose roots were not destroyed appeared to be quite healthy; they were then planted in soil, and are still growing and show no indication of disease. The two bulbs with broken roots showed signs of disease at the end of three weeks after inoculation, and at the six weeks period the disease had extended nearly half way up the bulb from the base. After being cut open the same kind of fungus showed itself on the surface that has been described as occurring on the bulbs received from Japan. The companion bulb was also diseased, and in about three months was soft and rotten, and covered with the fungus in a fruiting condition. The two bulbs with broken roots that were growing in water containing 1 per cent. of salicylic acid remained quite healthy, made fresh roots, and are still living.

Numerous experiments were made with other kinds of bulbs, and it was found that the fungus refused to grow on onions, however much mutilated. On the other hand, daffodil bulbs are very susceptible to the disease; if the roots are broken or a wound made in the bulb and afterwards powdered with the spores, the disease showed itself within a few days, and was in due course followed by the characteristic fruit of the fungus. It was invariably found that however much bulbs were mutilated and then inoculated with fungus spores, submergence for a few minutes in a 1 per cent. solution of salicylic acid or corrosive sublimate prevented the disease; in other words, all fungus spores coming into contact with the above-named solutions are destroyed, whereas the vitality of the bulbs thus treated is not at all affected. Dr. Halsted has described* a somewhat similar disease, called "soft rot," as at-

tacking the sweet potato in the United States. The fungus this disease (*Rhizopus nigricans*, Ehrh.) is closely allied to the species under notice causing the lily bulb disease.

In addition to the kind of fungus fruit already described, a second form, of sexual origin, called a zygospore, is present in the genus *Rhizopus*; several large, spiny zygospores were found in the matted mycelium present on bulbs in the last stage of decay, and presumably belong to our fungus. Zygospores differ from the minute spores already described in requiring a somewhat lengthened period of rest before they germinate, by this means tiding the fungus over that period of the year not suitable for its growth, and germinating when favorable conditions, climatic and otherwise, return. During this period of rest the zygospores remain in the soil, or attached to the substance on which they were produced. The minute spores previously described possess the capacity of germination the moment they are mature, and enable the plant to extend its area of distribution; and as these spores are produced very quickly and in immense numbers, it can readily be understood how rapidly the disease spreads when once introduced into a given locality. The fungus causing the lily bulb disease, although allied to *Rhizopus nigricans*, is quite distinct from this and every other known species.

SUMMARY.

The lily bulb disease is caused by a parasitic fungus called *Rhizopus necans*. The fungus cannot penetrate the unbroken tissues of the bulb, but gains an entrance through wounds, more especially broken roots. The amount of evidence forthcoming indicates that the bulbs are not diseased until after they are removed from the ground. The spores of *Rhizopus necans* are killed by a short immersion in a 1 per cent. solution of corrosive sublimate or of salicylic acid. Neither of these substances has any injurious effect on living bulbs, provided they do not remain in the liquid for more than fifteen minutes.

PREVENTIVE MEASURES.

The fungus is by no means confined to lily bulbs for its food, but as experiments have proved, can live on a great variety of dead or decomposed substances; it may also occur as a parasite on other plants than lilies in Japan, as it readily attacks and destroys daffodil bulbs. Judging from the enormous amount of injury caused, it would appear that the fields where the lilies are grown must be saturated with the fungus, growing indiscriminately on various substances, and attacking the lily bulbs along with other things, as a matter of course. If practicable, entirely new localities should be selected for the work. Even if this were done, great care would have to be exercised, so as not to introduce the fungus. The spores are readily conveyed from one locality to another in the soil on tools, cart wheels, shoes, clothing, etc., in addition to being carried by wind or animals. An important point to remember is not to allow vegetable rubbish of any kind to accumulate, and all diseased bulbs should be burned and not allowed to remain on the ground, otherwise the zygospores that form on such old decaying bulbs would start the disease the following season. As little injury as possible should be done to the roots of the bulbs when they are removed from the ground, and the bulbs should be allowed to "sweat" before they are packed for exportation. If the fungus is known to be present when the bulbs are being pre-

*New Jersey Agricultural College Experimental Station, Bulletin No. 76.

pared for packing, they might be placed in a solution of salicylic acid as advised. The sterilised earth in which the bulbs are packed appears very suitable for the work, and cannot be in any way considered as a cause of the disease — *G. Massee, in Kew Bulletin.*

AUTUMN COLORS.

Autumn colors at Graceland are now at their brightest, two places being particularly attractive. One is a large spruce with its dull green decked with clambering vines. The *Celastrus scandens*, native to Chicago, is striking in its stronger, richer green. A grape vine heightens the colors with bright yellow, while the Virginia Creeper completes the blaze with its rich and glossy scarlet. There are not too many vines to produce the effect of monotony, but just enough to make the contrast with the color of the spruce effective.

The other is the surroundings of a small sheet of water near the east entrance. A group of tall trees, a silver maple and darker sugar maple lightened with autumn colors, with an elm just peering out from behind them, make a striking middle ground overhanging the pool. In front and merging with them is a bright pepperridge all in scarlet and half hiding a dark Norway maple. Still further in front along the shore are the whitened heads of eupatoriums and other weedy plants contrasting with a touch at their side of the dark green of a pyrus and some spruces. An overhanging elm and a mass of dogwood with changing leaves and bright red branches make up the foreground. Last, a back ground of tall willows at the end of a low vista seen over another mass of

[CONCLUDED PAGE 62]

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dogwoods along the pool completes the picture.

With the exception of the maple, here is a grouping of native trees and shrubs and those the most common. Although the contrasts are marked, all unite quietly with each other, no one form or color making itself individually conspicuous. The glare of unusual plants is not felt, and all unite naturally into one harmonious whole. While the picture is entirely artificial, so far as the planting is concerned, the superiority of our common native trees and shrubs for natural effects could not be more plainly exhibited.

A. PHELPS WYMAN.

Graceland Cemetery, Chicago.

VARIEGATED JAPANESE VITIS.

In the spring I asked information about the climber of which I enclose some sprays, but I could only describe it which is less satisfactory than the sight of the eye. It grows about 20 ft. and is very luxuriant, coming into leaf not later than the ordinary Virginia Creeper, and remaining green and fresh and lovely with its profusion of berries for several weeks later. I bought it about nine years ago for a variegated Virginia Creeper.

A. D. P.

Schenectady, N. Y.

The specimens proved the vine to be what the letter, which came before them, led us to think they were, viz. the variegated leaved Japanese vitis, *Vitis heterophylla variegata*. It is a beautiful vine at all seasons of the year. The variegation did not appear on the shoots received and they may have been taken from a green leaved form. The most of those in cultivation have leaves beautifully variegated, and this variegation is more pronounced in early summer than it is later in the season. But towards fall there are numerous clusters of berries which change from green to black and from black to a lovely China blue, and it is then at its prettiest stage.

It is sometimes catalogued as Turquoise-berried vine, but is better known as variegated Japanese grape. It is not in the same class as the Virginia Creeper, which is an ampelopsis, though it is true that botanists, many of them, class ampelopsis, cissus and vitis all under the head of vitis.

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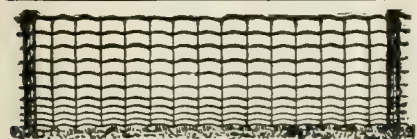
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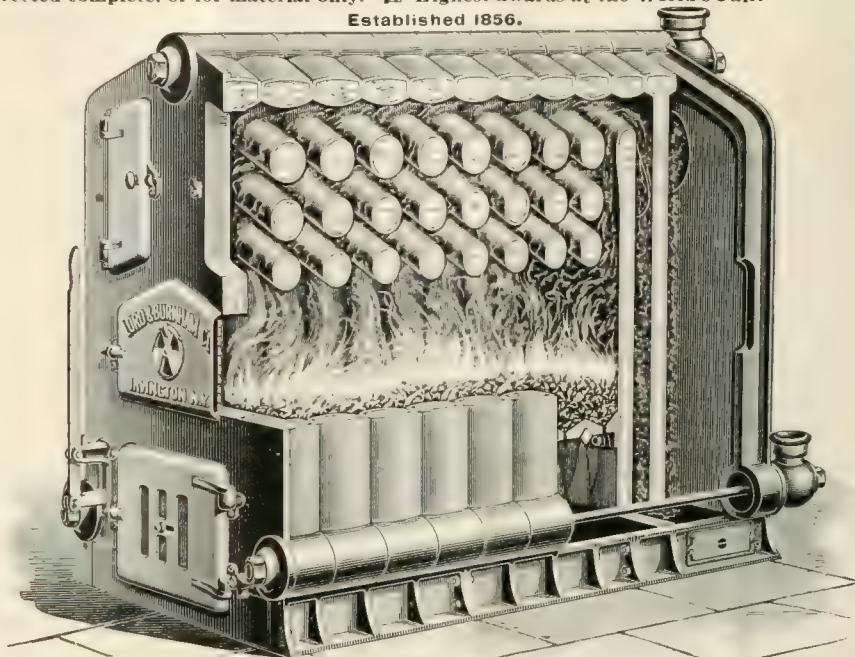
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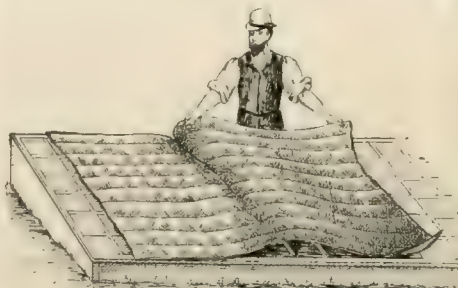
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No. 125.



VIEW IN THE UPPER HALL AT THE BOSTON CHRYSANTHEMUM SHOW.

Chrysanthemums.

THE CHRYSANTHEMUM EXHIBITIONS.

The Queen of Autumn has again held her annual court, and her subjects seems to be more numerous than ever in spite of the numerous predictions that the "chrysanthemum fad" had almost exhausted itself. In no less than twenty-four of the larger cities throughout the country regular "chrysanthemum shows" were held during the past month, in which giant blooms and skillfully-grown plants competed for liberal prizes. At many of these exhibitions the attendance was larger than ever before, showing increased interest on the part of the general public. It should be added, though, that there is

an increasing tendency to broaden these exhibitions and that other flowers appear more prominently each year. This is as it should be. While the chrysanthemum is necessary to give the great variety of color and form essential in a large exhibition, all other flowers in season should be effectively displayed in as great variety as possible.

The progress made of late years in the growing of exhibition blooms of the chrysanthemum is truly remarkable. A few years ago it seemed as though the limit had surely been reached, but each year the record of the previous season has been beaten. In plants the progress has not been so marked, and it would appear that the skillful gardener can go no further in that direction.

In this issue we present some engrav-

ings from photographs of several leading exhibitions during the past month. Boston is still well to the front in both specimen plants and blooms, and we are pleased to be able to give several views of this important exhibition. Philadelphia and New York both held excellent exhibitions, and Chicago was not behind. We also present several views of the Chicago show, which in size probably exceeded that of any other exhibition in the country.

Of the new varieties exhibited for the first time this year the immense white Frank Hardy attracted the most attention from professional growers. An engraving from a photograph of a single flower appears in this issue. This was shown at all the large exhibitions by Mr. A. Herrington, Madison, N. J.

The Flower Garden.

THE SPRING FLOWER GARDEN.

In the October 15th issue of GARDENING we spoke about bulbs for the spring garden but as there are a great many other plants (mostly hardy) that bloom in spring and can be associated with the spring flowering bulbs a few words about

is a choice plant of easy culture, it has beautiful, finely cut foliage and showy bright yellow flowers at the end of each branchlet. It grows about a foot high and blooms about April 10.

Sanguinaria canadensis (blood root), though plentiful in the woods around Mahwah, still a place was also given it in a shady part of the garden, as we regarded it as one of the prettiest spring flowers we had. The foliage is very handsome and the flowers appear just as it

cumbens comes into flower a little later with habit the same, but with flowers of a lilac color. Forget-me-nots, wintered over in a cold frame, come in handy for early spring work. They are much prized for cutting and are very easily grown. Ours last spring came into flower April 20 and lasted until the end of June. The variety *semperflorens* blooms later and bears flowers nearly all summer. The variety *Victoria* did best with us as the sprays are longer, making it more useful for cutting purposes.

Iris pumila was the first of the irises to flower. It makes a nice edging plant as it only grows about six inches high. It bears purple flowers which come into bloom April 24. The perennial poppies are very showy. *P. nudicaule*, yellow, and its variety *alba* are very showy when in flower. The foliage is also pretty, being in dense tufts and finely cut. It grows about a foot high and sends its flowers well above the foliage on long clean stems making it nice for cutting. April 25 it first bloomed. *P. alpinum* came into flower at the same time. There is little difference in the two varieties except that the foliage of *alpinum* is a little finer than *nudicaule*; still both should be grown as they last a long time in flower. *Iris cristata* is one of the nicest of the dwarf sorts having flowers of a light shade of blue fringed and spotted with yellow. Like *I. pumila* it makes a fine edging plant. April 30, is the time it blooms. The Chamea iris has bright yellow flowers and is very dwarf; it came into flower the same time as *cristata*.

Trillium grandiflorum is a common plant in our woods, but where it is given a place in the garden with good soil, the improvement in the size of the flower is remarkable. It is a beautiful flower and should find a place in every garden. It flowers about May 1. *Primula Sieboldii* is one of the best of the primroses. The foliage of this variety dies down over winter, the flowers appearing with the young leaves. It grows about eight inches high and lasts a long time. The flowers vary from pure white to deep crimson. It likes a shady place in which to grow and comes into flower about May 3. *Iberis sempervirens*, the ever-green candytuft, is one of our showiest spring flowers and is indispensable in every garden. It grows about a foot high and has flat heads of pure white flowers which are much used for cutting; flowered April 3.

Doronicum plantagineum is a beautiful plant growing about two feet high. The flowers are yellow, about three inches across and borne in great profusion. This is a choice plant but sometimes a little hard to grow; it came into flower May 3. *Anemone sylvestris* (the snow drop anemone) grows about a foot high, has large cup-shaped, pure white flowers on clean stems borne well above the foliage and will either grow in the shade or open looking nice the whole season. Came into bloom May 4. The single pæonies bloom about two weeks before the double ones and very choice they are. The flowers of many of them are of very large size. There are all colors to be found among them from pure white to deep crimson; the foliage is also handsome. They grow nine inches to two feet high, and bloom about May 5.

Viola cornuta is a good plant for amateurs to grow as it begins to bloom early and if kept watered will last the whole of the season. It is a very free flowering plant and likes a partially shady place in which to grow. The flowers are blue resembling single sweet



VASE OF MRS. JEROME JONES. NINE FEET IN HEIGHT. AT THE BOSTON SHOW.

them may not be out of place. In the cottage garden at Mahwah we had a large collection of these plants and from early in April until the end of June we made it a point to have a big display. In this way a long season of flowers was had, which is not the case if only summer flowers are grown as these are never at their best until about the end of June.

Among the many good things that flower early in spring I would place the mountain rock cress, *Arabis albida*, at the head of the list. It makes a grand edging plant and lasts a long time in perfection. The flowers are white, arranged in little round heads and the foliage is glossy green. It comes in flower about April 6, and lasts all through May, it is nice for cutting and is a very desirable plant. *Adonis vernalis*

is unfolding. The blooms are pure white but are of no use for cutting purposes. It flowers about April 12. *Aubretia violacea* is a dwarf growing plant of spreading habit and bears blue flowers. It makes a nice edging plant and is best raised from seed each year, as it looks a little ragged after it is through flowering. *A. Leichtlinii* has rose colored flowers; in habit it is similar to *violacea* but comes into flower two weeks later; about April 12.

Phlox subulata and its variety *alba* are showy, creeping, moss-like evergreen plants that are well adapted for edgings. They flower very freely; in fact the foliage is completely hidden with purplish pink flowers. The variety *alba* has pure white flowers which commence to bloom about April 20, and last through May. *P. pro-*



GROUP OF SPECIMEN PLANTS AT THE BOSTON SHOW.

violets. The variety *alba* has pure white flowers. They make a nice edging plant for the perennial border and are also desirable as cut flowers for small vase work. They are very easily raised from seed if it is fresh. We always had the best success when we sowed it as soon as it was ripe. Strange to say we have bought seed of this plant often but could scarcely ever raise a plant, while our own saving sown soon after being gathered, came up like weeds. It begins to bloom about May 6.

Trollius Asiaticus is a beautiful plant growing about a foot high, forming neat bushy plants the foliage of which is finely cut and bright green. The flowers are yellow, globular in shape, and borne well above the foliage on long stems which makes it desirable for cutting purposes. This is a choice and good plant and will grow most anywhere. It flowers about May 6 and lasts through June. *Cypripedium pubescens* is one of the easiest of the hardy orchids to grow; it likes a partially shady place in which to grow, where the ground is moist and cool. It is quite showy and if largely grown is nice for cutting. The flowers are yellow borne on good stems. This is a good plant for amateurs as it seldom fails to bloom by May 10.

Armeria maritima (cushion pink) is a tufted plant with grass-like foliage, the flowers of which are purple arranged in dense heads on long stems. It makes a good edging plant and looks nice even when the flowers are gone. May 10 is its blooming time. *Aquilegia chrysantha alba* was our first columbine to flower and is one of the best, having pure white flowers. *Iris florentina* is the earliest of the German sorts to flower, blooming about May 12. The color is pure white, it is also very sweet scented and one of the best of the class. *Linum perenne* is a free flowering plant with blue flowers. It grows about two feet high and lasts most of the summer if cut back a few times throughout the season. It was one

of the showiest border plants we had the past season; May 12 is its blooming time.

Lychnis viscaria is a choice plant for the border, very showy and fine for cutting and has red flowers, very double which last a long time and make a fine show if grown in a mass. No garden should be without it. It came into bloom May 12. *Dicentra spectabilis* is a well known plant and a showy one for the border, its long racemes of heart shaped red and white flowers being very pretty. It blooms about May 12. Tree pæonias are very desirable plants to grow. They are of very slow growth but when once they get well established are sure to bloom each year, flowering before the herbaceous varieties, which makes them valuable on this account. There are all colors among them. They commence to bloom about May 15.

Aquilegia chrysantha, *A. hybrida*, *A. vulgaris* and *A. cærulea* all came into flower May 18; the first named one is a beautiful yellow. *Polemonium cæruleum* has showy tufted foliage and terminal spikes of blue flowers. The variety *alba* has white flowers which grow about two feet high and commence to bloom about May 20. *Eremurus robustus* is a noble plant growing six to eight feet high; though an old plant it is as yet quite rare in our gardens, but all should grow it as it is a grand acquisition. The oriental poppies are always showy, their big open flowers being very conspicuous in the garden and making a big display as long as they last. They commence to bloom May 20.

This now brings us to May 20 when the bulbs are beginning to pass away. All the plants mentioned can be associated with them and make a telling effect. The list could be very much enlarged, as I have passed over many good things such as *Lychnis alpina*, *Linaria dalmatica*, *Hesperis matronalis*, agrostemmas, *Dicamnis traxinella*, lupinus, *Heuchera sanguinea*, etc. Grow a few of these plants and associate some bulbs with them and

you will have a lovely spring garden and a long season to enjoy your flowers. Why have a bare flowerless garden when it can be made a place of beauty at little cost! The majority of the plants mentioned can be easily raised from seed, but if your garden is small it would pay to buy them. The dates of flowering are taken from my diary of last spring at Mahwah, N. J., thirty miles from New York.

Pittsburg, Pa.

DAVID FRASER.

HERBACEOUS PLANT NOTES.

In many sections of the country the unusual and long-continued drought during summer and autumn was detrimental to the welfare of most of our hardy plants, but we must not be discouraged by one extraordinary season; we may not have another like experience in a lifetime and it would not be reasonable to condemn every plant which failed to flourish under the adverse circumstances this year. I have seen quite a number of places where all the plants flowered and grew as well as in ordinary seasons, but here we could notice that frequent waterings had been administered to the beds and borders, or else the ground was naturally inclined to be moist and the surface was kept open and loose.

On a medium-sized place the extra labor of watering during dry spells may not take up very much time and much can be accomplished with a little extra exertion, but on larger grounds it is often found almost impossible to water thoroughly all the plants in the borders, even if hydrants and hose attachments have been provided in the principal parts of the place; here it would take up too much time and cannot be done without considerable expense, which the owner is not always willing or able to stand. Hoeing and keeping the surface loose and open is the only available remedy in this instance and it is really wonderful how much better the plants will endure the drought where this point is not neglected.



NEW WHITE CHRYSANTHEMUM FRANK HARDY.

Young plantations and in some cases very old beds, have suffered most during the dry spell, while vigorous two or three year old ones withstood the severe trial better generally. On our own grounds, for instance, we have *Anemone japonica* in an old established row, which grew as usual 5 to 6 feet high and flowered as well as ever, the roots of these plants having penetrated several feet into the ground and there found all the moisture they required, while a more recent planting in a bed near by would not grow even half that height and presented a sorry appearance along side of the other. Many of the buds dried up when only half grown and would not open out, the roots being too near the parched surface where the ground was dry as powder.

Coreopsis flowers on old clumps were very small compared with those on two year-old plants, but this summer's seedlings did not make any show at all this fall as in other years; gaillardias acted in the same way. Numerous plants which have been divided late in spring or in the early part of summer have made but little growth where they have not been watered regularly and owing to the unusually dry fall we have, with few exceptions, abandoned our usual practice of fall dividing for this year.

Among the plants which withstood the drought fairly well and are still in bloom at this date (Nov. 1) with us, mention should be made of *Callirhoe involucrata*, numerous bright colored flowers being yet seen on the plant. The statice are as attractive as ever and have not suffered in the least. *Scabiosa caucasica* and its improved variety *connata* perfected their lovely light blue flowers continuously during the dry weather, although in size they were not up to the average; *S. oroleuca* and the large flowered *S. o. alba* acted in the same way and all of them are in excellent shape now. The bright pink flower heads of *Daphne cneorum* are conspicuous at this time of the year. *Erodium Manescavii* has not ceased to perfect its pretty clusters for the last three months and the foliage retains its freshness at all times. *Plumbago larpentæ* has been and is now in as good shape as can be desired, covered with its fine blue flowers for the last two months. *Aconitum autumnale* and *A. japonicum* are still showy and we can find quite a number of beautiful well-developed panicles in the delphinium patch.

Armerias seemingly have taken a new lease, for all the species are blooming at present very profusely; gaillardias are really good now and *Salvia pratensis* has

not given up flowering, late as it is; neither has the lighter colored *S. farinacea*. *Campanula rotundifolia* has furnished us with a profusion of bloom all summer and is decidedly better to-day than it was a month ago. *Silene maritima fl. pl.* exhibits half a dozen flowers or more on each little plant. *Saponaria caucasica fl. pl.* is grand at all times, flowers abundantly now and has hundreds of unopened buds. The slender spikes of *Reseda glauca* are not highly colored but they are produced uninterruptedly until snow falls.

Dianthus superbus gives us quantities of sweet-scented laced flowers yet; so does the deeper colored *D. Seguierii* and *D. atrorubens*, the brightest of all, shows now a greater number of densely crowded flower heads than at any time in the season. *Achillea aurea*, with its bright golden yellow flowers, appears to like the cold, it blossoms as freely as in summer. Flowers of nearly the whole collection of our *Phlox suffruticosa* could be gathered today in good shape. *Lychnis semperflorens plenissima* is a marvel for blooming and seems to enjoy the cooler fall weather, for it has sent up numerous new flower stems within the last month. *L. vespertina plena* also keeps right on perfecting its large double white flowers.

Cedronella cana has a neat habit doing admirably well while the drought lasted and is in splendid condition today. *Eriogon speciosus* and *E. speciosus major* seem to outlast the asters; the latter were seriously damaged by the dry weather and did not last as long as usual, excepting where they had the benefit of an occasional liberal dose of water. *Aster Amellus bessarabicus* and *A. ptarmicoides* hold out longer than any of the others. *Carlina acaulis* was mentioned some time ago in these columns; it is as good as ever now and will be until snow falls. *Silene Schaftæ* looks bright and cheerful still, while the half shrubby *Caryopteris mastacanthus* is really past its best, owing, no doubt, to the dry and warm spell, for last year the plants continued in fine shape until after the middle of November.

A few tall perfect spikes of *Galtonia candicans* are out of season, so are the oriental poppies and the *Anemone sylvestris* which pop up here and there on the plants, and I only mention them here as a curiosity, although it happens quite often that such things are ready to bloom a second time late in the fall. *Iris Chamaeiris* is also now in flower on half a dozen different plants, a rather strange behavior in this locality and probably caused by the check the growth received during August and September.

I should state here that we do not practice watering our herbaceous plants; we have neither time nor convenience to do so. When the ground is very dry at planting time, we may administer a thorough watering just after planting but ordinarily the plants are left to take their chances. The exceptionally dry fall we experienced this year has certainly shortened the flowering season of a great number of hardy plants, else the above list would be much longer, though under the circumstances it is a pleasant surprise to me and perhaps to many others, that so large a number of species came out unharmed and are able to hold their own so late in the season.

J. B. K.
Rochester, N. Y.

BED OF GRASSES—HOLLY.

I have prepared a circular bed eight feet in diameter for hardy grasses and intend having *Arundo Donax* for the centre. Will you please give me some information as to the number of roots I want of this

*Mayflowers.*

FIRST PRIZE VASE OF 40 WHITE AT CHICAGO

kind and also of the other kinds that will be needed?

What grasses do you think will look well planted with the above named? Do not want anything that will not prove perfectly hardy in this section of the country (with protection). Please give me an idea as to the arrangement of the different kinds in the bed.

Do you think American holly could be raised around here if well protected each year? How would you protect same?

Schenectady, N. Y. L. W. CASE.

If you get what florists call clumps, it would not require many plants for your bed. One large clump of *Arundo Donax* would do, either one or three should be used. Around the arundo *Erianthus Ravennæ* should be placed. Then a circle of *Eulalia zebrina*, followed by another of *Eulalia variegata* and *E. gracillima*. The two last named could be alternated in the circle. The plants grow in height to suit as named.

Just how many to use depends on the size of clumps obtained. The two eulalias, *zebrina* and *variegata*, make a mass of foliage which spreads to occupy much space. As a guide we would say that

clumps of six inch diameter could be planted two feet apart. After a year or two's growth every other one could be taken out.

We did not not think there was any question as to the hardiness of the American holly in New York. It is wild in Pennsylvania and also in Massachusetts. Plant it in spring, and for the first winter or two place forest leaves about the plants, to keep frost out of the ground, and we think it would thrive.

PROTECTING CLEMATIS.

How should clematis be protected during the winter? I had several large vines of *C. Jackmanni* that had been doing splendidly two summers, but last winter I lost nearly all of them. They were growing around the porch, on the west side of the house in a rather exposed situation. I had them heavily mulched with stable manure. They were growing in clay soil.

Now I have young vines, of the same kind, planted last spring in the same place, and would like to know how to protect them during the winter.

Wisconsin. MRS. D. HAMILTON.

Clematis heavily mulched with manure,

*Major Bonnaffon.*

FIRST PRIZE VASE OF 40 YELLOW AT CHICAGO.

*Mrs. S. T. Murdock.*

FIRST PRIZE VASE OF 40 PINK AT CHICAGO.

as these were last winter, would, under favorable conditions, be more apt to live the second winter than the first, simply because they were more fully established and naturally stronger plants. *C. Jackmanni* is probably the hardiest of the large flowered hybrids, and will stand a fair amount of abuse. There must be some cause that can be removed. You state that your soil is clay. In a heavy clay soil the drainage is generally sluggish, and such may be the case with you. If the bed or hole in which the clematis is planted is lower than the surface immediately around it so as to accumulate surface water, or if the snow swept from the porch covers the plant and is allowed to thaw and freeze, then the trouble may be attributed to these causes. We are inclined to think that one of these two conditions is the cause of the trouble.

We would suggest that you examine the surface level, and if water would naturally stand around the plant, to fill in with soil so as to make a small hillock. When fairly cold weather sets in cut your

vines down to within a foot of the ground, and then place wood or coal ashes over the crown, covering vines and all a foot deep. If you sweep the snow from the porch or a walk over them, then place an inverted box, or some boards over the ashes. The clematis prefers rather a light soil, deep and rich. They contribute so much to the beauty of our grounds that it pays to provide well for them, even at a little cost.

Next spring dig a hole two feet in diameter (a larger one would be better) and the same in depth, and if you have reason to suspect the under drainage to be poor make the hole eight or more inches deeper, filling in the bottom to a depth of eight inches with stones, broken bricks, slag or any non-decaying material, to act as a drainage pit. Place an inverted sod over the stones, and then fill in with a light, rich soil. If all your soil is a heavy clay and you cannot obtain any sand with which to lighten it, go to some pasture lot, or along side a roadway or any place where you can obtain some sods, cut them rather thin, chop them up rather fine, mix a little manure with them and then spread them out in some secure corner where the frost may act thoroughly upon them. In the spring mix this up well and pulverize all lumps, and use for planting. If you keep a weed pile use some of the soil from it.

The ordinary method of making a compost heap of rotted sods differs from the above in that the sods are packed closely and rotted mainly by the summer's heat and rains, but as you may want to use the product next spring you cut up the sod into small pieces so that the action of the frost may pulverize the soil and in so doing tear up the root fibres.

THE SEASON'S FLOWERS.

The outdoor flowering season at the north is now complete, and we may take account stock of our summer's growing. We may call pleasure, the profit, and disappointment the loss. Let us balance our accounts and see if we were repaid for our efforts. A canna bed caused an outlay of time and money, but has not its glorious and incessant blooms given us such a wealth of pleasure that when we credit it up, we must employ a large array of figures, so much so, that as we glance at it we are assured at once that no disappointment we can recall to mind, placed in the loss column, can overbalance it. We go on with our figuring in good humor, as we feel that in the outcome profit is ahead. We will not take into consideration that the canna roots may be used another year, but place that feature in the "suspense account," as something may happen to them during their winter's rest.

How did *Rosa rugosa* do? It opened up the rose jubilee in June and was the brightest of the bright, and then, continuing its blooms through the summer months, it also converted its June flowers into ruby balls that still hang pendant at its tips, carrying the memories of early summer well into the winter months. Here is another large sum to be carried to the credit of profit.

Let us consider that bed of petunias in the fence corner or the nasturtiums that seeded themselves! How many times we have plucked their blooms and yet saw no diminution in their ranks. And the zinnias, four o'clocks and the mourning brides that with the snapdragons give scattering blooms even after a light frost has cut down many of their companions, all of these place large figures in the first

account. Early killing frosts were kind to us this year and postponed their visit, enabling the cosmos and the dahlia to swell the profit column.

Of course we must place something in the loss column or we would not be good bookkeepers. We could have nothing to balance. The cut worms bothered us somewhat early in the season and might have caused a large array of figures at the wrong side, but a glance into the bound volumes of GARDENING soon told us how to manage them. Other varmints appeared at various seasons, but we have forgotten all their deprecations, and the loss was so small that we won't put it down.

The right kind of pleasure is conducive to happiness. Happiness is the perquisite of good health. Any light employment that takes the mind away from business, or household cares, tends to cause healthiness, as it rests the mind, while employing it. If the occupation be congenial, pleasure follows. When we consider this feature of our summer's gardening, and look back upon the happy hours we spent among our flowers, and consider the pleasures they have afforded us and our friends, we cannot but help saying here too is a large item to be placed in the credit column. We do so and foot it all up, and then looking at the insignificant sum total of the loss column, we wonder why we considered it at all. This winter we will plan and figure to plant more and then take pleasure in anticipation.

W. C. EGAN.

ASTER TARTARICUS.

One of the most useful of late blooming herbaceous plants is *Aster tartaricus*. Very nearly all our native sorts, of which there is such a large variety out of bloom, but just as they are over and one thinks the herbaceous display is past for the season, out comes this beautiful Asiatic species. There are not many leaves besides the radical ones. The flower stalks arise to a height of four to five feet, carrying masses of large light blue flowers at the summit, and these flowers are in perfection a long time. I write this October 28th, and should it not freeze before, I am sure there will be a good display for two weeks yet, and there has been a two weeks' display already.

This beautiful species spreads rapidly from its roots, soon forming strong clumps. It will be valuable for forming masses to give late flowers. There is no other herbaceous plant that I know that approaches it in appearance or in its value for late autumn display.

Philadelphia.

JOSEPH MEEHAN.

Trees and Shrubs.

BEAUTIFUL AUTUMN TINTS.

In the Oct. 15 number of GARDENING Mr. Meehan presents a timely article on "Beautiful Autumn Tints." As he has not only been in the business all his life, but has a love for plant life in all its forms, and therefore an ardent observer of nature's moods, we can place implicit reliance upon the statements he presents.

There must be some climatic influences that act upon the causes that produce vivid coloring in some plants. *Vitis Coignetiae*, which colors so beautifully in Great Britain, fails to do so with me and so far as I can learn, has not colored anywhere in this country. The liquidambar, which is barely hardy here, retains the natural color of its leafage, until they fall.

Ampelopsis tricuspidata (A. Veitchii) seldom colors at all here. The pin oak, for the three winters I have had it, turns to a rusty brown. The white oaks, especially some of the young trees, color a vivid red, almost scarlet. The red and also the scarlet oak color beautifully. Among the shrubs he omits *Cornus paniculata* which is one of the earliest in our woods to color, being a little earlier than *Rosa humilis* which assumes a soft dark red color very effective in masses.

In his article on the Pinsapo fir, when speaking of *Abies* (*Picea*), *Nordmannii* he states that the latter "thrives splendidly everywhere". I fear that he must except Egandale and the late Robt. Douglas' place at Waukegan; a place similarly situated as regards Lake Michigan. Two years ago Mr. Douglas showed me what he termed "his cripple," a poor straggling Nordman's fir; it was in a very sheltered place. Mr. Douglas remarked at the time that he had never seen a good specimen of it in the west. I grew one specimen for three years; each winter I placed a solid wooden fence on four sides of it, a foot or so away from the tips of the side branches, to act as a wind break. It did fairly well at first but lost the tip of its leader the first winter. The next winter I put excelsior shavings around the point of the new leader in addition to the winter's wind-break of boards, and in the spring the leader was all right. Last fall I did the same thing, but during the winter the thermometer went to 25° below zero and did not get above 18° below zero for four days. This spring not a bud above the snow line was alive. I waited until June 15 to see if any development would manifest itself that would give me hope of saving it. It came out strongly on the lowest tier of branches that had been covered with snow during the cold snap, but not above. I sorrowfully bid good bye to my Crimean friend and buried him in a bonfire. Any one seeing the beautiful specimen at Mt. Vernon would naturally want to grow one; but if he is a near neighbor of mine, and I love him, as I should, I would advise him to wait until we can warm our front yards by electricity.

W. C. EGAN.

HARDY VINES.

Enclosing the south side of the executive mansion there is a fancy iron railing running the entire length of the grounds. This has been utilized for the growing of hardy vines, principally of the showy flowered species, such as clematis, *lonice-ras* and *aristolochias*. No better place for the perfect development of these vines could be wished, as the situation is protected from the west by the huge buildings of the State, War and Navy Departments and on the east by the Treasury department.

Clematis Viorna coccinea is a perfect sheet of red flowers during early summer. Could all the plants of this beautiful variety be seen in like condition what a demand there would be for it, but the same might be said of all the species and varieties which are there planted. None of the *lanuginosa* section show a disposition to grow very vigorous, therefore they are easily kept in check, allowing plenty of room for a varied collection.

Clematis paniculata is not content with the section set apart for its use and would soon swallow up several sections were it allowed full sway. A large space is taken up with *Wistaria sinensis* which gives a good account of itself early in the season before most other flowers are awake.



SOME BUSH PLANTS AND STANDARDS AT THE CHICAGO SHOW.

The Supple Jack, *Berchemia volubilis*, a native of Arkansas, is rather attractive on account of its rather small neatly plaited foliage and graceful climbing or twining growths. The flowers are small and rather inconspicuous. *Lonicera sempervirens*, prettier by far than any of the foreign species, and found wild in the woods plentifully, where, owing to its straggling habit, hiding itself from view among the foliage of shrubs and trees, it is rarely seen, and still more rarely seen in anything like a perfect condition. On the fence near the east end of the White House it may be seen at its best covered by myriads of its orange-red flowers.

Brunnichia cirrhosa a near ally of the beautiful mountain rose of Mexico, *Antigonon leptopus*, is not however, as beautiful as the mountain rose; its flowers are ivory white in long racemes. The only drawback to the use of this vine is the habit of the roots which spread to places where they are not wanted, sending up growths many feet distant from the parent plant.

The variegated form of *Ampelopsis heterophylla* is an extremely ornamental plant but when given a place on a low trellis work it needs considerable tying in to keep it within bounds, as its growth is very straggling. It looks best when its thin branches have a background of English ivy or of *Ampelopsis Veitchii*. Not only the leaves but the fruit are highly ornamental, as at different periods of their growth they are green, ivory white and greenish blue. To perpetuate a well marked specimen it is best to propagate it from cuttings; but from seed we can always be sure that some of the seedlings will come handsomely variegated.

Some of the spaces on this wire fence are devoted to tender flowering vines; prominent among them is the curious flowered *Aristolochia Sturtevantii*. This is commonly known as the Duck flower

from the shape of the unexpanded flowers having a striking resemblance to that fowl. This plant when grown out of doors must have good soil and an abundance of water in dry weather as it is a rank grower, and if it be starved in any way the flowers refuse to develop beyond the earliest stages. It is a plant well worth growing as the flowers never fail to excite wonder on seeing them for the first time. We have to depend upon cuttings for its propagation as the plants have never produced seed in this part of the country.

Schubertia grandiflora is another good thing which has been grown in the same space for several years past. The flowers are large, pure white, somewhat resembling the well known *Stephanotis floribunda*. If the plants are put out early enough in the season they are almost sure to ripen seeds which is the best method of propagation, either sowing it in the fall or in the early spring.

G. W. OLIVER.

Washington, D. C.

HIBISCUS MANIHOT.

This handsome member of the hibiscus family was introduced to the American public a few years ago as "Hibiscus Queen of the Summer." Being new to us, the uninitiated were left to guess its botanical identity. Messrs. Peter Henderson & Co. this year catalogued it under its specific name, but describe its flower as pure white. If the seeds they offer produce a white flower, it is evidently a modified form or another plant, as the true *Hibiscus manihot* produces flowers of a clear sulphur yellow. The cut they give resembles in shape of flower and leaf the *H. manihot*, but strong, healthy plants assume a much more pyramidal habit, some being quite slender and attaining a height of four or more feet.

The introduction of this plant as a novelty is merely a repetition of numerous in-

stances where plants long ago cultivated, and for various reasons have become almost discarded and forgotten, are again brought to light, generally under some such name as "Queen of the Summer" in order to hide its identity until the one introducing it has filled the field of purchasers. This plant has been known in the botanic gardens of England since 1712, although it is not mentioned in Nicholson's Dictionary of Gardening.

Hibiscus manihot is a native of China and Japan, perennial in nature, growing from three to five feet high. Mr. C. H. Curtis, in a contribution to *The Gardener's Magazine* (England), from which most of the facts in this article are taken, describes the plant as follows: "Perennial, with succulent herbaceous stems. *

* * Leaves are palmate-digitate, five to seven lobed, deep green in color, handsome in appearance and borne on long, stout foot stalks. The flowers are produced towards the apex of growth. *

* Individually they are five inches in diameter, circular in outline, and a soft, clear yellow color closely approaching a sulphur tint. At the base of the flower is a dark, blackish area formed of the combined blotches found at the base of the five segments. The stigma is conspicuous, black or deep purple, stellate organ capping a moderately long style. Although the flowers are fleeting, this is atoned for by the large number borne, for if at the close of the day the most of the blooms of yesterday have faded there are plenty of others unfolding their petals and waiting for the approach of light to create a little sunshine of their own."

The plant is not hardy, in fact it is quite tender, but in the warmer climate of the south and California it should prove quite an acquisition. Here in the north the seed should be sown in the greenhouse as early as February in order to obtain strong plants by June. They should be planted in

full sunlight, in which case, if the summer is a warm one, they will commence blooming about the middle of September and continue until frost. Even before blooming they are very ornamental, especially as centers of small beds.

Last year I had a newly-planted tree die early in the season, yet too late to be replaced. The tree hole was some six feet in diameter, cut in the grass. In the cen-

already spoken of. Trumpet vine, wistaria, staff vine, dolichos, matrimony vine, (lycium) moon seed vine, (menispermum) silk vine (periploca) flowering grapes, as well as common fruiting grapes, are all to be included in the list.

The yellow jasmine, *nudiflorum*, must not be pruned, as the flowers come on the long shoots made the past summer, and we want all the bloom we can get in

only reclaim considerable land, but could be so planted as to become quite ornamental. The spot here illustrated, before Mr. Dupee took hold of it, was only unattractive, but intelligent application of time and money has produced a great change.

BERRIED SHRUBS.

I have just read Joseph Meehan's article in last GARDENING on "pretty berried trees and shrubs", and it seems to me he has overlooked one very essential shrub to fill out the list, the *Viburnum opulus*, or what is called the "High Bush Cranberry". It resembles the common snowball in both wood and leaf. The bloom is very much the same but not so heavy and full. The berries have some resemblance to the Mountain Ash, but are flattish and longer and the seeds are but one to the berry. The taste of the fruit is entirely different from any other berry known, having an aromatic flavor of its own. The berries stay on the bush until long into the winter. I have sometimes found a few in early spring. The shrub is of easy propagation from suckers but from the seed it will not grow the first season. The height of the growth is from three to five feet. For lawns and ornamental grounds I think this one of the prettiest and hardiest shrubs known. Z. K. JEWETT.

Mr. Jewett is quite right, I did overlook this pretty bush, and it is well worthy a place on the list. As he says, the berries are often on the bushes when winter is over. It is the *Viburnum oxycoccos* of nursery catalogues, but correctly *Viburnum opulus*. It is a native of both this country and Europe. It is worthy all the praise Mr. Jewett gives it

JOSEPH MEEHAN.

ARAUCARIAS.

In all of the florists' catalogues there are several species of araucarias mentioned, one of which I am familiar with as a parlor pot plant. In this country I have not seen the tree araucaria that is such an ornament in English grounds. Can you tell me the special name of it? Also why it is not grown here?

In a place that we rented in Hampshire, England, there was a fine one on the lawn; it was as large as a full grown maple tree and perfectly symmetrical, really a most beautiful object. I had never before seen a tree araucaria and was told that this one was a native of Australia, where the popular name was Monkey's puzzle, because no monkey could climb it. I soon found out the reason of this, because if one pulled one of the lower branches it set all the branches vibrating up to the top, and for some minutes they would jump up and down.

In the island of Guernsey almost every garden was embellished by one of these tree araucarias. I fancy that they might be grown in the neighborhood of Newport, R. I., as that climate is similar to that of Hampshire and the Channel Islands.

SUBSCRIBER.

All of the araucarias grow to be trees of considerable size in their natural habitats, but the one referred to by our correspondent as the "Monkey Puzzle araucaria" is *Auracaria imbricata*, and is a native of Chili, where it reaches to a height of 100 to 150 feet.

This species is the hardest of the araucarias, and as stated by "Subscriber," grows finely in the south of England, perhaps the most noted example being the araucaria avenue at Bicton, in Devon-



BRIDGE AT EDMOOR.

ter one *H. manihot* was placed and the balance planted with *Torenia Fournieri*. For that style of planting it was one of the most attractive I have seen.

This perennial may be taken up when the frost overtakes it and its roots stored under the same conditions usually given to dahlias. When packed in sand or any soil and placed in a warm cellar it is almost certain to rot. Plants wintered over and put out after danger from frosts will bloom in July if in a warm situation.

W. C. EGAN.

PRUNING VINES IN THE FALL.

The rampant, straggling growth of vines, which so many porches and other places display at this season of the year, is often left untouched until spring, detracting from the neat appearance which is so desirable. There is no necessity to leave the work of pruning till spring as most every one does. The work done late in the fall or in early winter would make the premises much prettier.

In my own case I do not prune the honeysuckle nor the akebia at this time, as both are very nearly evergreen here, and it does please me so to see the green foliage about the house in the winter season. But many of the shoots are brought into position, to keep up a nice appearance through the winter. These two vines are pruned in spring. I have read that the akebia should not be pruned in spring, as it would bleed to death. My vine on my porch has been pruned every spring since planted several years ago now, and it could not be in better shape than it is.

Deciduous vines of all kinds are as well pruned now, besides for the reasons

early spring. It will permit of a little digression to say here that this early flowering jasmine should be planted on the northern side of a dwelling, or the flowers come so early that they are nearly always caught in a late frost.

The new vine from Japan, *Vitis coignetiae*, said to be of brilliant colored foliage in autumn in its native country, is being much planted here now. So far the foliage is but little better than that of a Concord grape, which it much resembles in other respects, minus the fruit, of which none has yet appeared. But I have hopes that as it gets age and makes strong canes, color may come to the leaves.

JOSEPH MEEHAN.

BRIDGE AT EDMOOR.

We present herewith an illustration of a bridge at "Edmoor," the beautiful summer home at Oconomowoc, Wis., of Mr. John Dupee. It is an instructive picture in showing what may be done in grounds where sufficient water is obtainable, or where a stream naturally flows through it. Too often these opportunities are overlooked, and small streams that might be made attractive are allowed to remain with unsightly banks. Fortunately for that part of Lake La Belle, Mr. Dupee is a man of taste, and an enthusiastic lover of all matters pertaining to ornamental horticulture. The luxuriant growth of the cut-leaved maples at the right, and the laurel-leaved willow in the centre, show unusually intelligent care and attention.

We should have more of this kind of planting. Many large estates possess considerable area of low lands requiring drainage, where a wide ditch would not



A GLIMPSE OF THE CHRYSANTHEMUM SHOW AT MORRISTOWN, N. J.

shire, this avenue consisting of a double row of *A. imbricata* about 500 yards long, the trees being perhaps 50 feet high.

Unfortunately *A. imbricata* is not hardy in this country so far north as Newport, R. I., and it is therefore seldom met with except as a conservatory plant, and for that purpose is not quite so ornamental as the better known Norfolk Island Pine, *Araucaria excelsa*. W. H. TAPLIN.

EUONYMUS THUNBERGIANUS.

ED. GARDENING:—Will you please give me the name of a shrub a leaf of which I enclose? M. L. GALE.

The twig is *Euonymus Thunbergianus*, better known as *alatus*. It is one which is quite uncommon in cultivation, while being one of the prettiest, on account of the winged branches. A thin, flat, corky substance forms along the branches, which adds to the general attractiveness of this species.

All the deciduous euonymuses are valued for their orange scarlet fruit in the fall. The twig sent us was well filled with it. There is much complaint from many who have euonymuses of the ravages of a white scale, called the euonymus scale, as it confines itself entirely to this genus. If let alone it completely covers the bush in time. It takes in all kinds, evergreen, deciduous and creeping, native and foreign. Its presence should be closely watched for and when detected an application of kerosene or common whitewash made to the bushes. It has been known to become so bad on large bushes of the evergreen one, *Euonymus japonicus*, that they were cut down almost to the ground, as the most satisfactory way of starting a new and clean growth.

ACER RUFINERVE.

Acer rufinerve is a maple but little known in collections, but it is one destined for great popularity as its merits become

known. It is a Japanese species, closely resembling our native striped maple, *Acer pennsylvanicum*, having the same leaves with three acuminate lobes near the apex, and the same striped bark. The striking difference is in the glorious autumn dress the Japanese one assumes. At the present time its foliage is of a rich reddish yellow, and as the days go by, it becomes entirely red in color.

There is no other tree of like character that resembles it. Its habit of growth is somewhat pyramidal, much as is that of *striatum*, but perhaps rather more bushy. The *striatum*, of which there are many specimens here, never colors that I have observed, and in this respect it is where the two differ so markedly. When the leaves have fallen there is displayed the same beautifully striped bark on both, and at any time, save in the autumn, they would be declared one and the same tree. JOSEPH MEEHAN,

Philadelphia.

CATALPAS.

Please let me know through GARDENING if there is a double flowering catalpa. Also give me description of the flower of the true Teas' hybrid catalpa.

Winona, Minn. ALVIN C. EINFELDT.

We do not think there are any double flowered catalpas in cultivation. None have come under our notice.

Teas' hybrid catalpa has flowers white, with purple dots, and which are slightly fragrant. The panicles are not so large as those of the native sorts, in this respect partaking more of the character of the Japanese, from which it is descended. And with us it blooms later than the native sorts by about two weeks,

CORRECTION.—Phellodendron. Joseph Meehan writes us that in the setting up of his manuscript or in the proof reading, the name phellodendron was changed to

philodendron, an entirely different genus. Philodendrons, as he says, are mostly tropical plants, while the phellodendron he wrote of is a large growing hardy tree. The article in which the name occurs will be found on page 51, issue of November 1.

The Greenhouse.

MICROLEPIA HIRTA CRISTATA.

Kindly inform me what treatment will ensure success with the fern *Microlepia hirta cristata*. I have purchased this fern of different florists with like results, they always die.

Do they require high or low temperature and much moisture? I have two greenhouses heated by hot water pipes, one for roses and geraniums, the other for begonias, ferns palms, etc., and am very successful with other varieties of ferns. Why do I always fail with this one? I notice they never look healthy on their arrival, as other ferns do.

M. W. RANNEY.

Microlepia hirta cristata is not considered a difficult subject to manage, and will grow freely in a temperature of 60°. The greenhouse in which begonias, palms and other ferns are grown ought to prove a congenial place for this species. Perhaps the plants have been dried out when received, and then repotted without soaking the old ball, and if so their decline would be due to insufficient moisture.

This species is a free rooting one and requires plenty of water when established, while a good rose soil with the addition of some sand is all that is required in compost. The naturally pale green color of this fern, especially when grown in a light place, would account for the apparently unhealthy appearance of the plants when received. W. H. TAPLIN.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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SEE IF your shrubs or trees are not crowding each other, if so remove some. Over crowded plants never make fine specimens.

HOW WELL the snapdragons are holding on and blooming. Plant some again next year by all means. They bloom late and will stand several degrees of frost.

THE CALIFORNIA POPPIES (*Eschscholtzia californica*) are still blooming out doors in the Chicago gardens, an unusual thing at this season (October 24). When once planted it seeds itself and comes up freely each year.

WHERE THE SMALL limbs or branches of young trees or shrubs were tied into shape in the early summer in order to fill a gap or produce symmetry, unfasten the bindings now. The plant in making its growth formed its new wood along the lines assumed by the branches as tied and will now hold themselves in their new shapes.

EXAMINE CAREFULLY the contents of the five volumes of GARDENING now complete, and see if there is anything about any plant that can be grown in this country, in or out doors, that has not been fully written up by the most successful practical growers of America. If you find any omissions, or want any information of any character that comes within the limits of the purposes of this journal, write to its editor and you shall receive an authentic published reply.

GO OVER your beds and replace any rotted stake-labels, before the spreading of manure or winter's protection destroy them. Examine all trees or shrubs having labels attached by wires, and see if they are injuring the plant.

THE SMALL ROSE "White Pet" of the multiflora type, is one of the most satisfactory outdoor roses to grow. It is as hardy as Clothilde Soupert, and nearly as free a bloomer. It blooms in clusters, each flower when fully expanded being about half an inch in diameter.

IF YOU HAVE a pet evergreen newly planted, or some valuable shrub or small tree whose hardiness is questionable, situated in a windy place, put a solid board protection to the exposed side, or even all around it, leaving it open at the top. Semi-hardy evergreens may be safely carried through the winter by shading them from the sun during the cold weather.

CUT SOME seed stalks of the eulalias for large winter bouquets. They will last several years, although in furnace heated rooms the flower heads become in time discolored. Don't cut them with short stems. You then lose the graceful form a bunch with long stems assumes. Cut them at least four feet long. If your rooms are large enough, make a large bouquet, cutting the stems six or more feet long.

IF YOU WANT to move a large tree from one part of your grounds to another or from the woods, dig a circular trench about three to four feet away from the bole, any time after light freezing has occurred and before very hard weather sets in. Dig deep enough to get under the roots, making the ball smaller at the bottom, then wait until the ball of earth is well frozen. Raise with jack screws and load upon a low stone wagon. In the meantime a wide hole six to eight feet in diameter and three deep should be made where the tree is to go, and nearly filled with good soil. Immediately over it should be put one or two loads of manure to prevent the soil from freezing, so it can readily be used in the replanting. The manure may then be spread upon the lawn.

WE LATELY SAW a church altar decorated with cosmos where the stems were not over six to eight inches long utterly spoiling the effect of this beautiful flower and saw the same error committed on a home decorated dinner table at a house where extensive grounds enabled the owner to gather all the flowers desired and with as long stems as nature attached to them. Ignorance of how to use them so detracted from their beauty and grace, that the table would have looked better without them. All cut flowers should have enough of their stems and foliage to allow them to be placed loosely in the vases, and to furnish their own green. Cosmos should be cut with stems two and one-half to three feet and with them as with all flowers, the foliage attached to that part of the stem that is immersed in water should be removed, as it fouls the water.

PRINCIPLES OF PLANT CULTURE.

BY PROF. E. S. GOFF.

This is a most excellent work just out. In the preface Prof. Goff says: "This book has grown out of the author's experience in the lecture room and laboratory, while giving instruction to students in the short course in agriculture, in the University of Wisconsin. It is intended especially for students who have had little or no previous instruction in botany, and

it is hoped that it may also be found interesting and profitable to the general reader who would learn more of the principles that underlie the culture of plants."

Prof. Goff has evidently profited by his experience in the lecture room, an experience that has brought him in contact with minds of all degrees of comprehension, as his language is clear and concise, and easily understood. Any reader of GARDENING who would like to become more intimate with plant life and have a more thorough knowledge of its so-called mysteries can read this book with profit and pleasure.

After the Introductory Chapter, Chapter II treats of "The Round of Plant Life," following and explaining the phenomena of plant growth from the seed to maturity. The third chapter is on "The Plant as Affected by Unfavorable Environment," treating it under the following headings: Plants as Affected by Heat, Plants as Affected by Cold, Method of Averting Injury by Cold, Plants as Affected by Unfavorable Water Supply, Excessive or Insufficient; Plants Affected by Animal and Fungus Parasites, Giving Remedies, etc. The fourth is devoted to Plant Manipulation in Explaining Propagation by seed, division, suckers, stolons, layering, cutting, grafting and budding, and ending with instructions covering transplanting and pruning.

The fifth and last chapter under the heading of "Plant Breeding" explains the methods by which the best varieties of flowers and fruits are obtained and become fixed. In all there are some 265 pages of very interesting and instructive matter. The chapter on transplanting and pruning should be read by all who plant and prune.

NOTES.

"HEAVENLY BLUE" is all right as an English name, the botanical name is *Ipomoea rubro cœrulea*. While it is a glorious vine for California and the southern states, our summers in the north are too short for it as an out door vine. With its roots cramped in pots, however, you may have it in bloom in July. We have it in fine flower in a warm conservatory now. There is also a white flowered variety of it.

CLEMATIS PANICULATA, should it be cut back? Yes, by all means. Cut it right down to within six inches of the ground, and mulch about it with litter, and next spring it will throw up strong shoots, leafy from the ground, and they will bear a sheet of bloom.

CLEMATIS PANICULATA FROM SEED. Gather the seed and sow it as soon as it is ripe; you may sow it in flats, in a frame or in a half-shady bed, and leave it out in the frost except to throw a little litter over it to keep the frost from heaving all the seeds out of the ground, and next July or August every seed should germinate. Because the seedlings do not appear in spring, don't despair, they'll come up later.

THE FINEST SCARLET OAK.—*Quercus coccinea splendens* was the name that appealed to us in a reputable English catalogue a year ago, so last spring we got some of the young trees. They took good hold and made a fair leaf growth and now they are in their full tinted autumn dress, and their foliage is markedly brighter than that of the plain type.

GUARDING AGAINST INSECT PESTS.—In our proposals for trees and shrubs this fall we require with the plants a clean bill of health, that is an entomologist's certificate that he has examined the stock in the nursery and found it free from San

Jose scale and other noxious spreading pests, and in all cases these certificates have been given unhesitatingly.

A SCREEN (page 50) for Washington, D. C.—You want one 19 feet long and 12 feet thick as a protection against north-west winds. Your space is too small for a variety of things, restrict yourself to one thing and confine it to narrow limits, and get the good of the rest of your land for your other flowers. Try the "California" privet, and keep it well cut in. Were it not for the bark scale we would recommend *Euonymus japonicus*, but it now is too uncertain. The Chinese privet behaves so well with you if you like it better, use it instead of the Californian; or better still, get the Amoor privet. Of this last named I don't know if you can get it nearer than from Berckmans, of Augusta, Georgia; in fact we are getting a lot of it from there ourselves. It is a fine hedge plant.

THE GARDEN IN NOVEMBER.—It is November 9, and we have had a long drouth, a little frost, and now a little rain, but altogether the season has been mild. In the open garden we have calendula marigolds, sweet scabios, Drummond phlox, annual coreopsis (*C. tinctoria*), one or two pansies, a good many sweet violets (a creeping form of *V. odorata*), lots of mignonette, some sweet alyssum, and cosmos and several bold spikes of tritoma or torch lily all in bloom. By remembering this and preparing for it in time next year, out of doors needn't look so dreary between Hallowe'en and Thanksgiving. In the woods and meadow belts the witch hazel is arrayed in its yellow glory, and although not showy it is very striking, being alone in bloom.

PLANT BERRY-BEARING TREES and bushes in your gardens and grounds for the double purpose of ornament and use. The fruits of many of our shrubs are as attractive as are their flowers and last long on the plants, and some of them serve as food for the song birds we all should endeavor to coax to stay in our gardens.

DR. HOWARD'S GARDEN, PAGE 53.—Bravo, Doctor! That's the sort of garden to have; that's the kind that brings joy to the hearts of every one of us, brightness and beauty in our homes and gladness to our friends. An old-fashioned garden like that teeming with blossoms on every hand and every day of the summer,—grandmother's garden if you care to call it,—where you can cut a bunch or basketful of posies every day from April till November, gives more real pleasure to its owner and the people at large than prim painted acres of coleus and houseleeks.

AN OLD-FASHIONED GARDEN.—We tried it in Schenley Park this year. We needed a handy dumping ground and hit on the head of a deep ravine between two woods; into it we dumped hundreds upon hundreds of wagon loads of rock and clay, filling it near to the top, then surfaced it with good soil. Here we planted some shrubs and broadcast among them set out scarlet poppies, eschscholtzias, dwarf nasturtiums, snapdragons, pansies, marigolds, and all manner of hardy herbaceous plants, having enough of each sort to make a mass of its kind and color, and the effect was fine. In the middle was a plantation of hundreds of clumps of Japan and German irises interplanted, thence succeeded by thousands of gladioli, and banded with montbretias, from which we had flowers till frost. The steep face of this hill was graded a little and a series of winding stone steps set into it making the descent into the hollow quite easy;

the stones were the rough uneven slabs secured in blasting the rocks when grading in other parts of the park, and both outer edges of the steps and along the sides of the upper walk a wide belt of moss pink was planted. And the banks all about were planted with shrubs, vines, wild roses, columbines and other plants. More cameras and kodaks were levelled by visitors at this piece of gardening than at any other spot in the park, and still we had acres of painted summer beds.

DO RHODODENDRONS NEED PEAT?—Let me answer by giving you a very marked fact: Three years ago a gentleman in this city imported a large lot of seedling hybrid rhododendrons and planted them out in nursery rows in a field, and a few months later transferred the land and all on it to a real estate agent who of course let everything grow up wild. The soil was fair clay-loam mixed with shale rock. In summer the weeds were several feet higher than the rhododendrons. Last spring we got the rhododendrons and they had grown to be stocky handsome plants with a deep healthy green color. We never handled rhododendrons that lifted with such big balls of earth and roots as these did; we transplanted hundreds of them into the park and they all bloomed, and not one of them has shown the least sign of debility or check. If anybody tells you that you cannot grow rhododendrons without a peaty soil, give no heed to such advice, "facts are chieftains that winna deny."

FORCING HARDY SHRUBS FOR EASTER.—While almost all early-blooming shrubs may be had in bloom at Easter some are a good deal better behaved than others. Among the best and most reliable we find are weigelas, *Spiræa Thunbergii* and *S. Van Houttei*, common snowball, double-flowered dwarf prunuses, and *Deutzia gracilis*. We force these things in hundreds.

FEED YOUR WATER LILIES.—Never before did we see a more painful example of starvation than we did in Tennessee some weeks ago. There was a fine assortment of water lilies but they had very little leaf growth and very little bloom. What was the matter? They were in medium sized pots, when they should have been in tubs or big boxes. Get healthy strong plants to begin with, then give them root room and lots to eat, $\frac{2}{3}$ loam and $\frac{1}{3}$ cow manure, and a sunny place in the pond, and you will be sure to get growth and flowers too.

WM. FALCONER.

Cold Frames.

AN AMATEUR'S COLD FRAME.

My cold frame is, after all, very like all other cold frames, but my way of proceeding may be interesting to people who have to do without experienced help. It is about 7x3 feet and is set into the ground about 6 inches. It is filled with good, rich earth and made ready in the fall. I make all possible arrangements in the fall, because here the spring is often late and cold and the ground is hard and frozen. It is then covered with boards and left for the winter. About the middle of April the boards are taken off and the sash put

on. In my case this happens to be a large double window belonging to the kitchen, which is taken off about this time, and therefore can do double duty.

In a few days the earth is very warm and ready for the seeds. I give it a good watering through the rose of the watering pot, and in an hour or two I begin to plant. I wait for an hour or two so that the upper layer of earth may be a little dried off. I make long furrows from the back to the front, closer together than a good gardener would approve. There is not much more than an inch between the rows, but I have a good deal to do in a very small space. Some of the rows are divided in two. In these I put the most delicate things, like columbines, lobelias, Swan River daisies, etc., but I give whole rows to asters, snapdragons, balsams and the like. When all the seeds are planted and very carefully marked I put the sash in place and keep it shut for several days. The marking should be done by labels clearly and deeply written on, and I always buy mine by the hundred, because I have never yet found the boy who could be coerced into making more than a dozen. Mine are 6 inches long and cost fifteen cents a hundred and can be bought at Farquhar's or Henderson's, or any place where florists' supplies are kept.

In a few days I begin to see the pretty light green rows of tiny plants that are going to make my garden a blaze of color. Some germinate much faster than others, but they all come up at last. I raise the sash (by a brick at the front corners generally) and keep it open all day, closing it carefully at night. As the plants grow larger I raise it about two feet on two sticks; it would be well to have one of the nice notched sticks used by gardeners, but two ordinary sticks at each front corner will do. I thin the rows, but, I fear, not as much as I ought to; if the plants look sturdy I leave a good many, but if they seem to suffer I give them more room. One must watch the little plants and love them, and use one's intelligence and one's experience. When they look dry I water them always with a fine rose. It is fatal to dash water from a height. The seeds or plants are driven hopelessly into the ground, and it is also a very stupid thing to do. It is with gardening as with everything else—it should be mixed with brains.

About the middle of May or a little later I begin to transplant. A lot of things are four or five inches high, and very stocky and good, with bunches of fine roots. I water the cold frame well, and arrange where the things are to go in the beds. I plant everything in mud—in very wet mud—and cautiously draw about them the dry earth, making them as firm as I can. Often they not droop at all, and never for more than a few hours. If the plant is very succulent I cover it for a day with a berry basket which lets in air and keeps out sun. This is all I do,

.... WANTED

ISSUES of GARDEN AND FOREST: No 71, July 3, 1889; No. 78, Aug. 21, 1889; No. 80, Sept. 4 1889; No. 97, Jan. 1, 1890; and Index to Vol. iii, No. 149, Dec. 31, 1890. A premium will be paid for any of the above numbers. Address R. W., office of GARDEN AND FOREST, Tribune Building, New York City.

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and my garden is shining with color from the first spring flowers to the frosts.

In planting my cold frame I go on a certain principle. Some things like *Aquilegia chrysantha* and *A. carulia* thin out with me or die in a few years; therefore every year I raise a few new ones. I always try one or two experiments. I keep up a supply of favorites and raise a great many zinnias and asters, which fill up places of plants which have ended their usefulness, and from which I can cut as much as I choose. I plant the zinnias rather close together, so that the effect of the bed is brilliant in the extreme. I never buy mixed zinnias or asters or snapdragons or balsams. In the mixtures there is always a quantity of purple, pink and magenta, and these colors cannot be tolerated in my garden. I select the colors carefully and put them where they will be harmonious, and I always get two packets of white varieties. From such a cold frame as I describe I supplied six small gardens and had plenty for myself. I suppose that is because I am remiss in thinning out, but I have no weakly, spindling plants.

A. D. P.

WINTERING PANSY PLANTS.

Mr. H. Horman, of Taylor County, Wis., a thorough going German gardener of long experience, has often successfully wintered pansy plants by placing a layer of excelsior (shavings) between the rows and later, after severe freezing weather comes on, covering the beds completely with a moderate layer of the same material.

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The Fruit Garden.

PROTECTING FIGS IN WINTER.

There are so many gardens containing a few fig bushes that a few words on the winter protection they require will not be out of place. A common and all-sufficient covering is that of soil thrown over the branches, the limbs being first bent over and kept in place by stout pegs. When bushes have been treated in this way from the time they were first planted they can be treated in the same way again with comparative ease, even of large size. A neighbor has bushes fifteen feet high which have been so covered for twenty years, and from these bushes annual crops of fruit are gathered. But a good-sized bush never before bent over will be found a hard customer, and an attempt to bend it will be likely to result in broken branches. I find it just as good a way as any to dig the bushes up every year and either bury them, root and branch, out of doors or take them to a cool, old-fashioned cellar, where it will freeze but a degree or two, if at all. Another reason for the adoption of this plan is this: When figs grow unchecked and make vigorous growth there is but little fruit. When short-jointed shoots are made fruit is abundant. A plant dug up every year or root pruned will produce the wood which will give the fruit.

It is customary with the growers of this tree in Europe to plant it in rather poor ground, in which it fruits far better than in rich soil. This, of course, is on the same principle as root pruning, rampant growth being against it. The fig is seen in many small gardens in this vicinity. It is, in fact, hardy in this sense that the tops only are killed in winter, growth starting again from near the ground when spring comes. But this growth gives no fruit. There are nice bushes of it to be seen of about four to six feet, which are perhaps ten years old, and which bear fruit abundantly. These are either grown in tubs or are planted out in summer, dug up and wintered in a pit or cellar in winter.

I have seen the fig twenty-five feet high in the south of England, and have seen them here but three feet high with fruit on; hence may be pardoned for using the names plant, shrub and tree for it, as I have done in these notes.

Philadelphia.

JOSEPH MEEHAN.

Meehan's Monthly

A GUARANTEE of the high standard of *Meehan's Monthly* is that it is conducted by Thomas Meehan, formerly editor of the famous "*Flowers and Ferns of the United States*" and of the well and favorably known "*Gardener's Monthly*." Interesting not only to the amateur gardener, the botanist and the scientist, but also to every lover of horticulture and nature. The concise, instructive and practical articles made it popular from the first, and few of its class have been so universally well received or so widely quoted.

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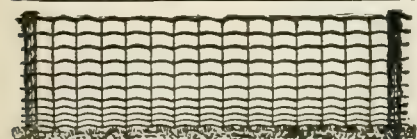
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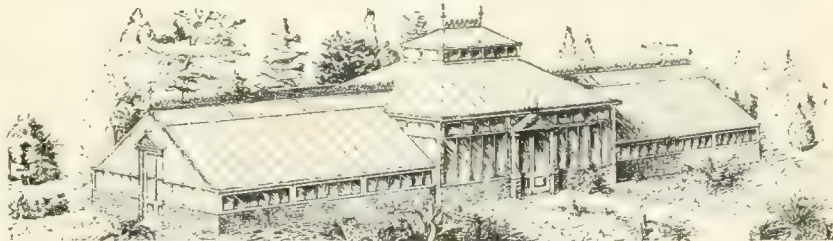
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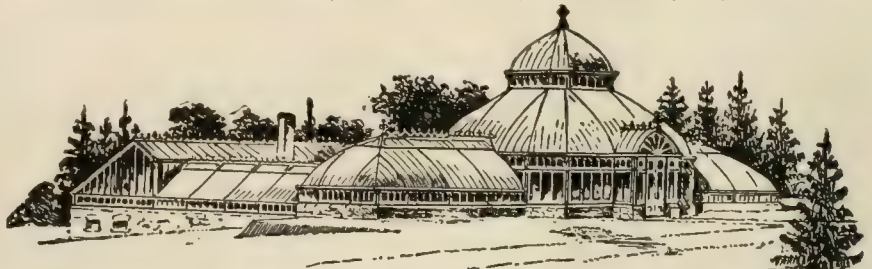
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No. 126.



BASKET OF ORCHIDS.

Orchids.

CYPRIPEDIUMS.

So much admired by many and tractible to manage generally, cypripediums will well repay all the attention you can afford them. They will much enjoy at this season a plentiful supply of heat and fresh air, and plenty of light and moisture. They should not be crowded on the benches, neither should they be too close to the glass, about 3 to 4 feet is the proper distance. If too close to the glass they are likely to throw too short stems. This will be particularly noticeable in such varieties as *C. Spicerianum*, *Charlesworthii*, etc. If when the buds first appear

they can be placed a good distance from the glass and given plenty of moisture, they will elongate their stems materially and where they have gone to their utmost length they may be put on benches much nearer the light, when they will strengthen in stem and furnish much finer flowers. All those little attentions will well repay growers of cypripediums. For cut flowers the length of stem determines materially the value of the flowers. If you desire to increase stock in numbers of pots, now after the flowers are cut is a good time for dividing them. I grow all the cypripedium family, from little *Fairieanum viscellarium* to the giant *Lindleyanum* in broken pots and sphagnum, and from many years of experience I fail to find a better material. I use a liberal

quantity of broken pots for drainage, not broken into too small fragments, in order to insure pot drainage. Pot them tightly and keep the sphagnum in as green and growing a condition as possible, repotting about once a year. My plants are very strong and produce very large flowers.

I never use any stimulant except on old *insigne* and its various varieties. Those I supply liberally with manure water, when they are about half way towards completion of their new growth. These also do very much better with proper drainage and the absence of strong soil, like peat and loam mixed, which so soon gets soggy and fills up the drainage.

The roots of cypripediums delight in clinging to sides of pots and as soon as

they get firmly attached commence a sturdy growth, so do not be too hasty about repotting them. When you do decide to do so it will be better to crack the pot and avoid disturbing the roots more than you can help, breaking away bottom of pot and a few pieces from its side, and then repotting into one or two sizes larger according to condition, in which case your plant will not receive a check or lose a leaf. Surface the top with nice short green sphagnum and encourage its growth and there are no plants in cultivation that are more grateful to good care and these little attentions than the cypripedium family.

Just now I have in flower some fine specimens of *C. Boxallii atratum* and *C. Morgania* carrying two flowers on each stock. The plants are 7 and 8 growth plants, are very strong and grown with nothing but sphagnum moss. I have not yet found any flower that shows a more magnificent make-up in strength of color, in petals and unique appearance generally than *C. Morgania*. My next favorite is *C. Leeatum superbum*. This is a variety that every one interested in cypripedium culture should have in large quantities. It is easily grown, sure to flower and remarkably beautiful in every way.

The cypripedium family generally are so easy to handle that they are safe for any amateur to purchase, and the longer he grows them so much more will his zeal for their welfare increase, but with everything to recommend them in freeness of growth, etc., I have had the displeasure of often seeing them in a most pitiable condition, water logged or perhaps the other extreme, rooted to death, or starved with cold, and then you are told by the non-cultivator in charge of them that these things are no good. Of course I need not describe my feelings, but depend upon it I thought the saddle should have been put on to the boss.

Utica, N. Y.

W. MATHEWS.

BASKET OF ORCHIDS.

The basket seen in the illustration was one that we had made after the style of an ordinary oyster basket, but a little smaller. The rough, natural and perfectly clean material of which the basket was made contrasted very pleasantly with the delicate orchids, which were the principal flowers used. H. H. C.



HALF STANDARD CHRYSANTHEMUM. GROWN BY J. REARDON, 1897.

Exhibitions.

EXHIBITION OF THE NEW YORK GARDENERS' SOCIETY.

When it was announced a few weeks ago that the New York Gardeners' Society would invade the most exclusive precincts of New York's wealth and fashion and give a flower exhibition in the grand ballroom of the palatial Astoria hotel on Fifth avenue, as soon as it should be completed, the scheme looked like a wild dream or impossible romance, but it is said that "where there's a will there's a way," and to be persuaded that pluck, tact and determination will prevail over vast odds and that with the help of these qualities nothing is impossible, one had only to visit the beautiful place on the forenoon of Friday last.

The thousand electric lights of the richly decorated hall looked down upon an unwonted scene. Great boxes and crates, flower pots and vases were seen everywhere; an army of men in shirt-sleeves

tramped over the paper and straw-littered velvet carpet; tall chrysanthemums leaned up familiarly against the crimson draperies, and carved walls made a strange setting for plebeian turnips and potatoes. In one department, however no incongruity was apparent. In perfect accord with the costly accessories which surrounded them, looking as if they had always been there and had a perfect right to stay there, the great groups of orchids reposed with easy grace. Here and there through the busy scene flitted the "lady patronesses," suggesting and directing, solicitous and worried by the chaos that seemed to prevail; but finally in commendable good season, the last vase was filled, the

the private greenhouses of wealthy New Yorkers and arranged by the expert gardeners who had grown them. A stately *Kentia Balmoreana*, 25 feet in height, from Richard Brett, gardener to J. B. Colgate, occupied a central position and at intervals throughout the hall were tall well grown specimen palms, etc., from Mr. Brett and Charles Knight, gardener to E. R. Ladew. Mr. Knight showed a fine specimen of the rare *Araucaria Rulei compacta Nepraski*. Large groups in the various classes of decorative foliaged plants also came from these exhibitors and from Wm. Duckham, gardener to D. W. James, Charles Webber, gardener to Mrs. J. Hood-Wright, A. L. Marshall,

last exhibit placed, the last crate was carried out, floors swept and rich rugs spread in the marble-floored corridors. The liveried attendants took their posts, the orchestra began to play, and the finest horticultural exhibition that New York has seen since the brave Lenox Lyceum effort, years ago, was open to the public at \$2 per ticket.

The exhibition lasted three days and the prices of tickets were placed at \$2 for the first day, \$1 for the second and 50 cents for the third day; the profits to be devoted to charitable purposes. The Gardeners' Society was under no obligation except to provide and arrange exhibits, all the expenses, including premiums, being assumed by the "lady patronesses," the names of fifty of whom were displayed on the schedule, and the net result after paying all expenses was about \$800 for charity.

The main hall was devoted principally to the plant exhibits, contributed from

gardener to J. B. Dutcher, J. McKenzie, gardener to Mrs. Charles Pratt, and others. In the chrysanthemum plant classes, the principal exhibitors were Peter Duff, gardener to J. Crosby Brown, Robert Whyte, gardener to Mr. Graeffe, G. B. Winslade, gardener to the Osborne estate, and J. M. Hunter, gardener to H. V. R. Kennedy.

The Whitney cup for best group of decorative plants covering 100 square feet, was won by Chas. Knight with the most artistically arranged group in the hall; second prize going to Richard Brett. Mr. Brett took the Gerry cup for 75 foot group, and second in this class went to Wm. Duckham for a superb collection. Mr. Brett also won the Cottenet cup for six palms, the J. Hood-Wright cup for groups of crotons and silver medals for six foliage plants, best specimen palm, best specimen croton, best specimen foliage plant, best six ferns and best specimen fern. Silver medals were awarded to



PRIZE WINNING GLOXINIAS.

Charles Webber for three crotons, to Wm. Duckham for specimen *Dracæna Sanderiana*, to Wm. Scott, gardener to Mrs. T. C. Eastman, for three pans of lycopodium and for best six cyclamens; to Wm. Anderson, gardener to Mrs. F. E. Constable for *Eucharis amazonica*; to J. McKenzie for berried plants to A. L. Marshall for Rex begonias; to G. B. Winslade for three chrysanthemum plants; for group of pompons and for one specimen each of crimson and yellow; to Peter Duff for specimen pink and for best specimen chrysanthemum plant in the show. Robert Whyte got the J. Pierpont Morgan cup for group of chrysanthemums.

Of chrysanthemum blooms there were some wonderful exhibits by Peter Duff, W. C. Russell and others. G. B. Winslade took the Speyer cup for best collection and S. A. Leuba was second. Peter Duff took the Loomis cup for best six varieties of six blooms each, W. C. Russell second, silver medals being the second prize in each case. Mr. Duff's Viviani-Morel, Mrs. Geo. West, Mutual Friend, Minerva and Jeannie Falconer were all notable flowers. Silver medals were also won by W. Scott for 36 blooms in 36 varieties and 24 varieties; by Peter Duff for vase of 12 white and vase of 12 pink; by W. C. Russell for 12 yellow and for the 6 largest blooms (Viviani-Morel) and by G. B. Winslade for best crimson; T. Harvey, William Hunter, J. G. McNicoll, Wm. Anderson and Robert Angus received certificates in these classes.

In cut roses, Wm. Turner, Owen J. Owen, A. A. Taaffe and A. J. Wengert won certificates, and the Aldrich cup for winner of the largest number of certi-

icates went to Mr. Turner. In carnations, certificates went to Wm. Turner, Owen J. Owen, A. A. Taaffe and Wm. Cowan, Mr. Turner getting the Trevor cup. J. M. Hunter got the Trevor cup for gardenias and Wm. Duckham the Trevor cup for violets. W. Scott took three silver medals and G. B. Winslade one, for greenhouse grapes.

The orchid displays from H. Clinkaberry, gardener to C. G. Roebeling and A. Herrington, gardener to H. McK. Twombly, were beautiful. Mr. Herrington took the silver medal for a group composed mainly of cattleyas and cyripediums and his big pan of *Cattleya labiata* with 75 blooms was much admired. Mr. Clinkaberry won the Dodge cup for arrangement of orchids with a most beautiful basket of rare blooms. A pretty cocos graced the center and the square handle, four feet high, was hung with sprays of oncidium, *Dendrobium phalaenopsis* and asparagus. The Irving cup for best collection of orchids also went to Mr. Clinkaberry. This group comprised many gems, such as *Cypripedium insigne Sanderia*, *Cypripedium Thayeranum*, *Cypripedium Henry Graves, Jr.*, and *Ærides Lawrenceæ*. Adjoining it was a fine group not for competition, from Lager & Hurrell.

Trade exhibitors were assigned to the foyer. Here were some fine groups of araucarias and pandanus from John Scott and F. R. Pierson Company, Mr. Scott winning first prize in both classes, and a collection of decorative plants from Siebrecht & Son, not for competition. A. Schultheis took a silver medal for ericas, Hugh Graham, for chrysanthemum Penn-

sylvania, C. L. Trauth, for group of cyclamens and W. A. Manda for fifty varieties of fancy caladiums. A group of orchids in the form of a graceful mantel decoration by W. A. Manda was much admired for its artistic arrangement.

C. W. Ward made a very large exhibit of carnations. It included many handsome novelties, such as White Cloud, Bon Ton, Gold Nugget, Maceo, New York, Blush, John Young, C. A. Dana, Flame and Mrs. James Dean, the latter being the prize winner at the Philadelphia exhibition as best American seedling not yet disseminated. A smaller display of carnations was made by C. Besold. The new pink variety Francis Joost in this collection looked very promising. Wm. Rockefeller also showed seedling carnations and Robert MacMillan a vase of fine mignonette.

A. P.

HALF STANDARD CHRYSANTHEMUM—GROWN BY J. REARDON.

Of the many beautiful specimens of chrysanthemums shown at the late exhibition of the Horticultural Society of Chicago few had more admirers than the class embracing standards and half standards. We herewith present an illustration of a specimen exhibited by J. Reardon, gardener to Mr. Martin A. Ryerson, of Chicago.

Those who saw and admired the monstrous blooms displayed in vases and on single-stemmed plants, may not all know why these blooms are so large when compared with those shown in our illustration. If the life history of the plants were known, the difference in size is easily understood.

In both cases the plants are started from slips, taken in the case of the large-flowered specimens in April, May or June, and for the standards much earlier. The standards are allowed to produce side-branches flowering at the tips, while the single stemmed plants, destined to produce but one flower, have all their bloom buds, save the one chosen to remain, pinched off as fast as they appear. The texture of the soil, the enriching by manure water, and in fact all treatment up to time of flowering save training into position of the standard, is essentially the same. Thus all the root power in one case is used to produce but one flower, while in the other it supports many.

L. G.

ALOCASIA SANDERIANA.

This most gorgeous foliated stove plant, a native of the Eastern Archipelago, was sent out by Mr. William Bull in 1884 and '85.

The magnificent specimen illustrated was grown by Geo. McWilliam, of Whitinsville, Mass. It was awarded a richly deserved medal by the Massachusetts Horticultural Society.

This plant grows well in a mixture of fibrous peat, sand and charcoal, but will grow better in fibrous loam, leaf mould and charcoal, in a warm stove house with a winter temperature of 65°, rising 20° in summer. Treated kindly, with water the temperature of the house, it will thrive first rate and make a pleasing subject,



ALOCASIA SANDERIANA.

GLOXINIAS.

The effect of selection and cross-fertilization in this genus of South American bulbs is the production of a race of flowers that now hold up their bell shaped tubes and display their marvelous beauty in an unstinted manner. All of the six species in the genus originally described had drooping flowers. They are such free and continuous bloomers, and of such exquisite beauty, that all amateurs possessing even the smallest greenhouse should grow a few.

Dry bulbs may be started in February or March in 3-inch pots filled with a light sandy soil, with an addition of some well rotted manure. The pots should be placed near the glass in a warm greenhouse and shaded from the sun, and afterwards shifted into larger sizes.

Never let the plants suffer for want of water, which should be given at the surface of the soil, care being taken that the upper parts of the leaves do not get wet. Keep the surrounding air moist and warm. After flowering gradually cease watering until the plants are dry, when they may be set aside in some warm dry place until the next season.

H. P.

but treated carelessly, with cold water from an ordinary hydrant, it will dwindle away and there will be nothing left but the pot and soil.

D. A.

LONDON PARKS.

One of the most beautiful examples of decorative landscape gardening is to be seen in Battersea Park, situated on the banks of the river Thames. Considering the location of the park, so near the center of the city, it is of quite large extent. It contains few if any driveways, and is largely used by the public as a place for recreation, there being extensive tracts of green lawn laid off for tennis, cricket and other outdoor games.

The bedding and decorated portion occupies probably one-fifth part of the whole and is separated from the open lawns by an irregular grouping of evergreens and trees. This portion of the grounds is beautifully laid out. No two beds are the same shape and there is a great difference in the plants they contain; at the same time they all seem to be arranged so that each group forms a part and adds to the beautiful landscape in

such a way that if anything were removed it would mar the picture. Although not very extensive a general view of the whole could not be obtained from any one point. An irregular walk circles about the outer edge of the lawn, which is undulating and contains here and there fine specimens of trees; these interfere with the general view, but by their aid beautiful vistas are made possible and the artistic effect greatly enhanced.

Along both sides of this path on the grassy slopes the various beds are laid out. There is little or no carpet bedding, for which this park was at one time noted. Tuberous rooted begonias are largely used and make a gorgeous display with their wealth of bright colored flowers. The smaller flowered *semperflorens* varieties also do well and are frequently used in connection with other plants. No bed is filled wholly with one kind of plant, the ground surface being covered with alternantheras, dwarf begonias, or other low growing plants, while tuberous rooted begonias, fuchsias and geraniums, mostly the ivy leaf section, are set at such distances apart as to show the other plants beneath. A border of lobelias, different colored alternantheras, pansies, *Mesembryanthemum cordifolium variegatum*, echeverias or other low growing stock finish each bed. Groups of standard fuchsias are arranged, planted in the lawn five to six feet or more apart, so that each specimen stands out by themselves. Palms are also arranged in the same way, the pots being plunged, while a few handsome large specimens stand out by themselves. Some of the beds on the outside are made to conform to the curve of the walk, they are placed some fifteen or twenty feet away with the shrubbery as a background. One of the most striking contains castor beans, tobacco, white herbaceous phlox, white stocks, fuchsias and border of lobelia. Through this bed, standing above the lower plants, are beautiful Japan lilies. These latter are used with good effect in many other beds. A very pretty and unique bed is filled with herbaceous plants principally; there are campanulas, white and blue, *Hyacinthus candicans*, and a quantity of *Lilium auratum* that stands up above the others in bold relief. The groundwork of the bed is ivy geraniums and stock gillies with a border of pansies. There are miniature paths laid out in this group which are covered with variegated mesembryanthemum and lobelias. The grass of the lawn is kept in splendid condition, being cut frequently, and the trees here as well as all through the park are well taken care of, no dead limbs being seen anywhere. In the center of the recreation grounds there is a restaurant and about this a circle is laid out and contains some very pretty bedding.

HYDE PARK.

The flower beds in this pleasure ground are situated along one side of the park, next to an avenue called the park driveway. This avenue is lined on the opposite side with fine residences. Like Battersea Park, it contains no driveways, though the grand stretches of lawns are quite extensive and there is an abundance of beautiful and symmetrical trees. The public are allowed to use the lawns for cricket and other outdoor games. There is also a very pretty artificial lake crossed by ornamental bridges. The bedding is arranged in two long rows, there are circles, parallelograms and squares all cut out of the sod. A wide gravel walk separates one line of beds from the other and a similar path runs between the inner

rows and the park proper. These beds are planted with a great variety of flowers, among the most prominent are fuchsias, tuberous rooted begonias and ivy leaf geraniums. *Begonia sepeflorans* is bedded with good effect. Pansies are largely used for borders and also to fill in among fuchsias, ivy leaved geraniums and other plants. Nearly all the beds were planted in this way; tall growing stock was set among that of lower growth at such a distance that each plant stood out prominently and those on the surface of the bed had plenty of light and bloomed quite as freely as their taller companions. There was such variety in this style of planting that each bed seemed more interesting than the other.

There are several groups of palms, the pots plunged and placed so that each plant is effective in itself. Bamboos in pots are arranged in the same way and the effect of this grouping is very pretty. Some quite tall plants of *Plumbago capensis* are planted in a group, and like the palms and bamboos they stood out individually; they seemed to bloom freely but were not looking as strong and hearty as with us.

There is no *Begonia rubra grandiflora*; the good qualities of this variety may not be known to them, but as other sorts that do not seem to thrive well here on account of the hot and dry atmosphere do beautifully there, this grand kind should attain a perfection that would completely eclipse the others. K.

HERBACEOUS PLANT NOTES.

The Siberian large leaved saxifragas or megaseas, as they are called by some, make excellent border plants not only because they furnish us with attractive flowers in early spring, but also on account of their foliage being highly ornamental and practically indestructible, lasting in full beauty throughout the year. Exposing the plants to the full action of sun and the piercing sharp north and west winds in winter may sometimes scorch the edges of the leaves and in such exposed positions it may be advisable to throw a few evergreen boughs or a quantity of light litter over the plants, just enough only to break the rays of the sun. It is not necessary to keep the hard frost from the roots or the foliage either, as they are natives of cold countries, but are not accustomed to our bright sun and the dry atmosphere of our winters. In their native habitat the deep snow protects the foliage effectually against harm and in some sections of our own country, where the winters are steady and the snow remains on the ground until spring opens for good, no other protection would be needed, nor is it advisable to cover the plants as early as November or December. The foliage is perfectly safe from injury so long as the sun is low, but by the middle of February and in March when the sun rays are gaining in strength, a slight shading will prevent the scorching of the leaves.

Not so very long ago I had an opportunity to notice a large patch of about twenty or twenty-five clumps in an old, half neglected country garden. White arabis had crept in between them from one side and the ordinary rose colored moss pink, *Phlox subulata*, had overrun the intervening spaces from the other end; weeds were also in evidence but the large glossy deep green foliage had a very bold and striking effect. I had not seen anything like it in a long time, for we seldom meet these plants now grown in quantity. Here the thick leather-like leaves were 10



STANDARD FUCHSIAS IN REGENT PARK, LONDON.



AN EIGHT FOOT VASE IN REGENT PARK, LONDON.

inches long and about 6 inches wide with undulated, wavy and serrated edges. It was *S. crassifolia* which blooms in April and May in large upright panicles of very showy, rosy red flowers and the numerous dried-up flower stems gave evidence of the freedom with which they had bloomed. The dry weather of August and September had not affected the beauty of the foliage in the least, though the situation was fully exposed to the sun all day and the soil was naturally rather on the dry side, conditions which are not considered the most favorable for these plants. They had been there undisturbed in the same place for twelve or more years, as I was informed, and this surely had something to do with their unusual vigor. How this patch comes through the winter I cannot say, for the old foliage was not there, only this season's growth could

be seen, but even if the leaves were defective in this instance at the time of flowering, the abundance of bright bloom would have caused us to overlook this imperfection.

Equally hardy is a second Siberian species, *S. cordifolia*, which has paler colored flowers and more roundish foliage with less crimped edges. Both are valuable plants also in the rockery and by introducing them on the north or northeast side, no protection of any kind would be required. Another large leaved variety goes by the name of *S. speciosa*. It has flowers of a brighter and deeper color than the others, with the leaf-stalks tinged a lively red and the edges of the foliage not so distinctly waved nor serrated as deeply. It is, however, a most desirable and distinct variety.

S. lingulata, a European alpine species

with white flowers, washed or blotched irregularly with reddish pink, is a month later with its bloom and as robust a grower as the others. This last one and the two following species seldom retain perfect foliage in winter with us but may be all right farther south; otherwise they are hardy enough, for they flower as freely as the others every year and we never lost a single plant from the effects of the cold. *S. ligulata* has light rose colored flowers and more oblong foliage, and *S. ciliata* bears the same flowers, but the plant is more compact and the foliage rather smaller than in the other.

All these saxifragas have the thick leathery leaves with that peculiar brilliant lustre at all times. Even at their first appearance in early spring when new growth commences, they shine as if varnished over and they retain this glossy appearance throughout the year. They may be used to advantage as isolated single specimen plants in the lawn or for the center of small beds planted with low plants, or for edging around taller growing hardy plants and grasses. They are in place along the front part of shrubberies, anywhere in the rock garden or in half hardy situations under high, lofty and spreading trees and are also surely among the best subjects for the spring garden. No skill is required to grow them successfully and ordinary good garden soil, light or heavy will suit them equally well and they have a clean and cheerful appearance at all times. An old clump may be divided into single eyes and in a year or two we could then enjoy the beauty of a good sized patch planted in a prominent place of the border where a single specimen would probably escape notice entirely.

J. B. KELLER.

Rochester, N. Y.

CHRISTMAS DECORATIONS FOR THE HOME.

Quite a charming effect can be produced by arranging a good-sized cluster of mistletoe in the fashion indicated by the accompanying sketch.



A DECORATIVE EFFECT IN MISTLETOE.

The sketch herewith represents mistletoe hung with a number of tiny tin lanterns, better known as "Fairy Lamps," which I had obtained in Boston, with a vague idea that they would produce a pleasing effect among some Christmas greens which I was about to arrange. They did so with excellent results. The lantern, about three inches tall, holds a tiny metal lamp about the size of a thimble, in which is packed a bit of sponge;

this is saturated with illuminating oil, and the lantern burns with an even tiny flame for about two hours. I suppose they were intended for a Christmas tree but their pretty effect hanging amongst the holly and mistletoe I am constrained to recommend. These lanterns cost only nine cents each; they can be painted with gold bronze to improve their appearance, and if they are imbedded in holly and mistletoe the pretty effect produced upon the pearly berries of the latter and scarlet ones of the former, it would be difficult to describe.



AN ARRANGEMENT OF HOLLY AND MISTLETOE.

Among carnations these little lights are even more pleasing; in fact, in a not too brilliantly lighted room they produce on pink and white flowers a dainty glow which attracts immediate attention. I support the lamps either without twigs or with strong wire inserted carefully among the foliage.

F. S. M.

NOTES FROM EGANDALE.

One of the most imposing and at the same time graceful plants in bloom this past summer among the perennials was the *Diplostegium salicifolium*. I am unable to give the habitat of this plant, but as most of the species heretofore described are from the Andes, South America, I fear its abilities to withstand our winters

The plant strongly resembles tall growing asters, or perhaps, resembles *Boltonia latisquama*, the false-chamomile but is more graceful in outline, and carries its white aster-like flowers in a still more pleasing manner. This species, like that of the boltonias, is very closely related to the asters. Should it prove hardy it is a charming addition to that useful group.

Mr. E. L. Beard, President of the Shady Hill Nursery Co., writes me as follows: "I note you refer to *Vitis coignetiae* not showing color, (referring to the beautiful coloring of its leaves in the fall, in England). With us under glass at least it is most brilliant and the finest color we have ever seen. How it will do out of doors I cannot say. Under glass, however, it is as good as it can be. Possibly moisture has something to do with the coloring in the fall."

The last sentence undoubtedly tells the

story. Judging from the articles on this subject in the English horticultural papers, this vine colors best in the damper districts of England and Ireland. Its habitat is one where moisture is predominant. Evidence seems to point to the fact that we, in a comparatively dry climate, must discard this vine. I did so this fall. *Euonymus americanus* is a rare native of our woods, and when transplanted to the shrubbery makes a dense growing, light green foliaged shrub, extremely ornamental with its brilliant crimson fruits that gave it the name of "strawberry bush." It seems to drop its leaves much earlier than its European cousin, *E. atropurpureus*, nick-named the Burning Bush or Wahoo thus showing its beauties in advance. As usual *E. elatus* outshone all other shrubs thus fall in the vivid coloring of its foliage.

It is well known that narcissus, perennial poppies and some other plants lose their foliage some time during the summer, thus leaving a bare spot of ground around them. A group of a hundred of the Poet's narcissus in my shrubbery caused me to look around for some remedy, not requiring annual sowing. I found it by planting near the group a couple of plants of the European *Malva Alcea*, the hollyhock malva. "The books" quote this plant as being four feet high. They should say four feet long, as it may be described as a bushy sprawler. While the narcissus were blooming, the malva was gaining strength and as soon as the blooms were over it commenced its march towards the occupancy of the land, and by the time the leaves of the narcissus were faded they were covered by the malva, which freely produced its showy pink flowers all summer.

I have tried at various times quite a number of tender vines as summer climbers, not annual vines, but those of a shrubby character and perennial nature but without much success. Undoubtedly there are many that might do well here out of doors, if grown under glass on the place and carefully transplanted at the proper time, but my experience has so far been confined to plants bought yearly and shipped to me.

There are, however two exceptions worthy of note, viz., *Stigmaphyllon ciliatum* (golden vine) a handsome vine from Brazil, producing very freely, on rather short stems, a fringed orchid-like yellow flowers.

The other exception is *Passiflora Pfordii* which blooms quite freely from small plants readily obtained from the nurserymen. Of course all such plants require a warm, sheltered situation such as a wall facing south affords.

W. C. Egan.

AUTUMN FOLIAGE OF OAKS.

In the November 15th issue of GARDENING Mr. Egan refers to the lack of color in the pin oak as it behaves with him. He also speaks of the white oak as possessing much merit on account of its color, especially in the case of young trees. Perhaps it was to let me see this for myself that I received some leaves of both these oaks from him, by mail, some time ago, but as no letter came with them, I was not sure of the object in sending them. But I have classed the white oak among beautiful ones for many years. Our trees of it color a purplish red, not a striking color, but I value it among the colors of other kinds.

But I took up my pen chiefly because of Mr. Egan's remark "especially some of the young trees," speaking of the white oak coloring. All small oaks turn to a much brighter color than large ones. Just



VIEW IN A BERMUDA CITY GARDEN

why this is I cannot say, but species which do not color at all as large trees are beautifully tinted when in a young state. This is kept up for several years of their seedling life. Were it to continue always, instead of two or three noted sorts of beautiful fall colors there would be a dozen.

It was my privilege recently to pass through a nurseryman's grounds who raises oak seedlings. The acorns had been sown in narrow beds and seedlings of one, two, three and four years' size were to be seen. It was a great surprise to me to see the picture these plants presented. My pencil and paper were soon in hand, and I noted the following kinds, all of which were most attractive: *coccinea*, *rubra*, *palustris*, *Phellos*, *bicolor*, *alba*, *Michauxii*, *Prinus*, *imbricaria*, *macrocarpa*, *olivæformis* and *obtusiloba*. None of these when full grown, but *coccinea* (scarlet) *rubra* (red), *palustris* (pin) *alba* (white) and *imbricaria* (laurel) show a disposition to color.

It was surprising to me to see such generally colorless sorts as the *Phellos* (willow) and *macrocarpa* (mossy cup)

so lovely in their scarlet foliage. *Prinus*, the chestnut oak, was of a yellowish pink, such as is sometimes seen in the sugar maple, and rarely in an oak. Our best tree is scarlet, next red, then pin, and closely following it is the laurel. The pin very often behaves as Mr. Egan says his does, turns to a rusty brown, but at times it is charming, as it was this year. The red was more brilliant than usual this year, and, in fact, I think all kinds of oaks were, as well as other trees.

Referring to the sweet gum, which he says retains its natural leafage until the last, there are trees in dryish places do the same here, but set a tree in a wet place and see the glorious sight it will be. It is then very much the superior to the sour gum. The latter tree changes within a week to a vivid scarlet, then sheds its foliage. The sweet gum changes gradually, the green changing to yellow and the yellow to crimson, the combination of colors being most pleasing. It is a beautiful object for many weeks.

I regret to add that the *Vitis Coignetiae* behaves here as it does at Egandale. But

I have hopes that as it grows and becomes strong it may do better. So far, though, here for several years it has not colored at all.

JOSEPH MEEHAN.

VIEW IN A BERMUDA GARDEN.

This will interest our friends who are possibly planning a winter trip to Bermuda this season or later. Bermuda may justly claim high rank, horticulturally, among the tropic isles in southern seas. Her gardens, her lilies, and not least, her healthful climate make Bermuda an ideal winter resort.

LANTANA ROSEA.

This old form of the lantana is quite serviceable when used as a hanging-basket plant. Young plants from cuttings taken in February and kept growing under heat until warm weather is assured, make strong plants for immediate effect. If used for porch decoration, as the one here illustrated was, it should hang in as much sun as possible, as those branches not in direct sun will not bloom freely. Any rich soil suits it.

W. C. EGAN.

SEASONABLE NOTES.

At this season there cannot be much done in the flower garden except preparing for winter in the way of giving protection to all plants that may need it. But it is well not to be in a hurry to heap on a lot of manure or other covering before cold weather sets in. A light covering of decayed manure on the perennial borders will be beneficial to the plants, as any rains in the fall will wash the strength of it into the roots, and as a general rule perennial borders need this, being often left undisturbed for a number of years, and as the majority are all large rooting plants they soon impoverish the soil in which they are growing.

It is a good rule to lift and divide the plants in the perennial border about every four years. The best time to do this is in the early fall, say from September 15 to October 15, but the earlier it is done the better, as the plants have then time to get established before cold weather sets in, and have less chance of being heaved out by the frost.

All tender roses, such as the tea and hybrid teas should be well protected as they are far from being hardy. There are many ways of giving protection, some prefer covering them up with soil or sand, but we have found a good way is to put a piece of sod around the neck of each plant, placing boards around the bed and filling in to the depth of a foot or fifteen inches with dry leaves and covering the whole with boards or something that will shed the water. In this way we have had them come out all right in spring, but if a pit is handy no doubt the best way is to take them up and pot them about the end of October. Plunged in such a place, where frost can be kept from them, they make nice stock to plant out in spring, but they do not give such a good return of flower as the ones left out in the bed.

The hybrid perpetuals do not need so much covering as the hybrid teas for they are much hardier, but they are the better for a good coat of rotted manure as some are not quite hardy. Two of the late ones introduced, Margaret Dickson and the Marchioness of Londonderry (both grand roses) were cut to the mulch line last winter. They appear more tender than most of the H. P. class. Where only a few are grown it is advisable to straw them, that is tie the rose to a stake and wrap straw around it. In this way they generally come out all right. Crimson Rambler needs very little protection. It seems to be one of the hardiest roses there are. Last winter it came through all right with not a twig hurt, having been left to itself in a very exposed situation. Of the White and Yellow Ramblers we cannot speak, for we have not yet tried them during winter, but we have some just planted and will see how they behave.

If there are any corn stalks left in the garden or field they will be very useful for making wind breaks to protect the frames or tender trees and shrubs. By driving a few posts into the ground and nailing some strips to them, to which the corn stalks are tied, they make a cheap and splendid windbreak and just what is needed around trees and shrubs that are not over hardy, such as rhododendrons, azaleas, retinisporas, Japan maples and the like. By giving them such a protection, they are less liable to get burned and nothing looks better than a well furnished tree or shrub.

When the lawn is sufficiently frozen to bear a barrow or cart it is then a good time to topdress it, if it should need it.

Two parts soil, one of wood ashes and one of well rotted manure make a nice top dressing. A light coating of this will be very beneficial and early in spring a light coating of bone meal could also be given.

The cold frames should now be well banked with long manure, so as to exclude all frost. Shutters, mats or straw can be used to cover the sash. Where violets are grown in frames and intended for winter flowers, keep them snug and warm, but give air freely on all bright days, putting on the glass before the sun goes down in the afternoon. In this way the heat of the sun can be retained for some time. Keep the soil clean and well stirred between all plants that are in the frames. This will cause them to dry out quicker and the plants will be less liable to rot. Very little watering in the frames will be needed, have them rather on the dry side, but when it is needed water just

were always very much admired. His were grown in a cold frame.

Pittsburg, Pa. DAVID FRASER.

A GOOD NATIVE SHRUB.

The common American elder *Sambucus canadensis*, is in many respects better than the European species. This is particularly true of course at blooming time, when the American elder is a perfect glory. As it grows in some places in this neighborhood, on the shores of Lake Champlain in border of timberland, it is a real inspiration. The luxuriance of its foliage, flowers and fruit, and its informal home-likeness make it one of the easiest plants to use in free, loose plantings, especially where the lawns are not clipped and where the gardener cannot afford to be always pruning and clipping and training.

The accompanying photograph is of a



AMERICAN ELDER

as soon as the sash can be taken off safely. This will give the foliage time to dry before night. See that the bulbs for winter flowers, if outside, have enough protection to exclude all frost, or the pots may get broken by the soil freezing in them, and furthermore it does the bulbs no good, although we have flowered them well after they were frozen hard. Some of the early Roman hyacinths and paper white narcissus should be in at once for Christmas flowers.

Lily of the valley, if not yet planted, should be at once. Clumps are the best for outside work and pips for forcing in the greenhouse. If the ground is in workable condition many sorts of lilies can be planted in the garden. In planting lilies, or in fact all bulbs, they are the better for having a covering of sand before the soil is filled in. This keeps them fresh and less liable to rot. If a bell glass or frame is put over the Christmas roses (belleborus) they will give you some nice flowers in early winter, but if left to themselves they become dirty and are useless for cut flowers. If covered by glass and protected from hard frost they are all that could be desired. While at Dorset Mr. Falconer had them in fine shape and they

typical roadside plant, quite uncared for and always subject to damage from roaming cattle. The elder can be easily propagated by cuttings or layers. Every wild garden ought to have from one to a hundred.

F. A. WAUGH.

University of Vermont.

FUTURE ROSES OF THE PRAIRIES.

Prof. J. L. Budd of the State Agricultural College, Ames, Iowa, is evidently doing good work in his experiments. We quote some abstracts of his letter to the *Iowa State Register*.

In the spring of 1892 we began the work of crossing the blossoms of the beautiful Russian *Rosa rugosa* with pollen of General Jacqueminot, Lamarque, La France and other fine tender roses. We now have quite a large plantation of the resulting hybrids. The vigor and luxuriance of the plants is a surprise to all visitors, and the same is true of the singular variations of the foliage, habit of growth, and the flowers. A large per cent. of the flowers are single, but in size and color they have a wide range. In size they range from the button rose to

those with a spread of petals of five inches and in color from white to the brightest red and the darkest crimson. The hybrids with double flowers number about twenty-five, ranging in number of petals from twenty to over one hundred. The colors of the General Jacqueminot crosses are brilliant to an unusual extent, as they combine the rich color of the Jacq. with that of the *rugosa* petals. As an example, the hybrid we have named "I. A. C." has 66 petals—20 more than Gen. Jacq.—is bright dark crimson in color, and the petals are thick, firm and stand out like those of a perfect dahlia. This peculiarity of the petals, derived from the *rugosa*, is peculiar to most of our hybrids, and to those produced so far in Germany and the United States.

In addition to our hybrids we have from the great nursery of J. C. Smith, of Erfurt, Germany, several hybrids of the Russian *rugosa* and the best German roses. The four best of these are Charles Frederick Warth, Empress of the North, Thusnelda and *Rosa rugosa fl. pl.* Of these the C. F. Warth retains most perfectly the *rugosa* leaf, and its forty brilliant crimson petals stand out in bold relief as in the dahlia. Of the hybrids produced in this country from *rugosa*, Mme. Georges Bruant is the best. It has the *rugosa* leaf and the pure white petals come out perfectly every season. It is only half double, but the petals close well over the center.

Why do we say these are the future roses of the prairies, homes and gardens? (1) They are all very hardy. (2) They stand drouth perfectly. (3) Their foliage is free from the attacks of the rose slug,* fungi, etc (4) They are free bloomers well through the season. (5) Their color and fragrance are not excelled by any of the tender roses. At present none of these are obtainable, except Madame Georges Bruant, but the best of them will soon be on the market.

Other rose hybrids: We also crossed, in 1892, the blossoms of our native wild rose (*Rosa blanda*) with pollen of the best tender roses. Most of the hybrids are single, but in leaf, habit, and blossom they are exceedingly varied. Some of them have double flowers, but have an ordinary pink color. They are hardy, free bloomers, and really pretty, yet they lack in many respects the beauty and perfection of foliage, the rich shades of color and the rich fragrance of the *rugosa* hybrids.

DISEASE OF THE JAPAN LILY.

Lovers of the beautiful Japan lily have, probably, been alarmed by the news that its existence was threatened by a novel and destructive disease, a description of which is given in the current number of the *Kew Bulletin*. Fortunately, however, says an exchange, with the account of the bane comes the discovery of an antidote.

The disease appears to have developed with astonishing rapidity. It was practically unknown two years ago, but the crop of bulbs raised last year in Japan for exportation to Europe was almost entirely ruined by it.

The attention of the authorities at Kew was drawn to the matter by a London firm, who forwarded to them for examination a large number of the diseased bulbs. Out of 73,000 bulbs of *Lilium speciosum* sent to them from Japan only 250 were fit for sale when they arrived in England. Nor was this all, for out of a consignment of *Lilium auratum* received at a later date, amounting to nearly 40,000, only about one-tenth was unspoiled. The disease is a peculiar form of fungus. The



HARRISII LILY WITH THREE FLOWERING STEMS.

experts have found that short immersion in a 1 per cent. solution of corrosive sublimate or of salicylic acid is fatal to *Rhizopus necans*, as this pest is called.

The growers of these beautiful flowers in Japan will do well to abandon the infected ground and to adopt this simple precaution.

Copy from *The Daily Advertiser*, Yokohama, Japan:

In reference to the above article, A. Meyer, of Yokohama, Japan, writes:

"Concerning this so-called new disease *Rhizopus Necans*, I would like to say a few words, based on the experience and experiments of one of the oldest business houses in this country engaged in growing and exporting lilies.

This fungous disease is not a late development, but has been a menace and a discouragement to consignors and shippers since lily bulbs have been exported, though such losses as are reported in this article before me have never come to our knowledge. The probable truth is that speculators here or elsewhere, in order to catch the highest fancy prices, shipped the bulbs at the wrong season. July, August and September in this climate are hot and sultry, with the thermometer averaging 85° to 95°, and are followed by a rainy season that produces a hot-house temperature and an air so saturated with moisture that fungus attacks not only out-door things, but the clothes, books, shoes, etc., in fact, everything in

our houses not in daily use.

One can easily imagine this is a fine condition for growth of plants, but a poor one for harvesting field products. Bulbs lifted now, not even perfectly ripe, and packed in boxes to be shipped through the tropics to Europe, stored close to boilers or some heat-producing cargo, afford in the two months' voyage ample opportunity and time for the fungus to do its deadly work.

The danger would not be so great if the bulbs could be harvested and packed without injury, which is almost an impossibility, as they are very tender. Any small bruise or little injury to the scales affords an opportunity for a herd of fungi to enter and possess the bulb. This in turn affects other bulbs until a whole case is destroyed.

In October comes the warm, dry days, and brisk, refreshing nights. Now the earth is dried, the harvest season arrives regulated by Nature itself, the bulbs are ripe and dormant, and the proper time for exporting is at hand. Bulbs hurt in harvest dry and quickly heal on account of the cool, dry weather, therefore satisfactory consignments can be made at that time.

Bulbs packed and shipped at this time may be expected to reach their destination in fine order, although there are a few tender varieties that even the most careful treatment cannot effectually pro-

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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WILL SOME OF THE READERS OF GARDENING let me know if the Star of Bethlehem (*Ornithogalum umbellatum*) is hardy in a climate somewhat similar to that of Chicago?

IF YOU HAVE HAD TROUBLE in having your *Lobelia cardinalis* roots lifted by the frost, or any other shallow-rooted plants, try inverting a sod over them for the winter.

LET YOUR TULIP BEDS become frozen a little before covering, and when you do cover, do so rather lightly, or your tulips will come up lean and lank through excessive covering.

IF IN A COLD CLIMATE, an empty box inverted and placed over tree pæonies, not only helps them somewhat over winter, but retards their growth in the spring, holding back the buds that are inclined to start too early.

GOOD TIMES ARE COMING. More people than now take GARDENING can afford to subscribe. The more subscribers it has the better and more varied matter it can furnish. Therefore, if you have been at all pleased with it in the past, endeavor to obtain new subscribers, that you may be better pleased in the future. Gardening is an art that unites all interested in it into one common brotherhood, where one and all have the same object in view, the same interest at stake. Do your share in maintaining that interest.

OBITUARY.

William Grey died Thursday, November 25. His death removes one of the landmarks of the profession. The famous orchid collection which he established for Erastus Coring at Albany forty years ago is rated among the finest in the world. His old friend Wm. R. Smith, of Washington, sends us the following heartfelt tribute to his memory:



THE LATE WILLIAM GREY

The sad news of William Grey's death fills me with dismay. I am led to exclaim with Charles Lamb, "All are gone, the old familiar faces." An acquaintance of nearly forty years, made during honeymoon times and renewed annually at one place or another, always with great pleasure and profit intellectually and professionally, to me, at least; he was acute in his observations, exact in his description of natural objects, well read and perfectly honest in his expressed opinions. A friendship with such a man was a joy indeed.

As a high priest in orchid culture and one of the best all-round plantsman in the United States, it will be long ere we meet his like again. His essay on orchid growing for the New York Club, and his catalogue of orchids, are both out of print. I think they are valuable, especially for beginners.

I might mention many things of him as a social companion, but this is not the time.

W. R. SMITH,

Botanic Garden, Washington, D. C.

WHERE ONE HAS YOUNG PLANTS of Bechtel's Double Flowering Crab growing in a section where wild rabbits abound, wrap the trunks with straw rope up to a height beyond their reach, or fasten earth up against them. These short-tailed imps are very fond of the bark of this variety.

WHEN SPREADING MANURES or other fertilizers on the lawn put a double dose of the richest over that part near trees and large shrubs. As a rule the feeding roots extend even farther out than the tips of the branches, very few being near the bole, a fact to be remembered when doing the fall work.

DON'T SMOTHER YOUR ROSES when wrapping them up for the winter, allow some air to reach them. The main object in covering them is to maintain an even temperature. Do not wrap them closely as you would yourself. Your body emits heat, which you desire to retain near your person, but plant life does not to any perceptible degree.

IN Meehan's *Monthly* appears the following: "A Japanese Habit."—At the birth of a Japanese baby, a tree is planted which must remain untouched until the marriage day of the child. When the nuptial hour arrives, the tree is cut down and a skilled cabinet maker transforms the wood into furniture, which is considered by the young couple as the most beautiful of all ornaments of the house.—Translated by Sarah D. Lanning, from *La Semaine Horticole*.

NASTURTIUMS HAVE LONG BEEN KNOWN to sport freely, even showing several shades of color on one plant, but seldom producing distinct markings in such flowers. We learn that for 1898 Messrs. Vilmorin-Andrieux & Co., the famous French Seed Establishment, will introduce a variety which they name *Chameleon* in the dwarf class as well as in the taller growing variety. This sort produces not only many colors with very similar markings on each plant, but also flowers with different markings, and must prove an attractive and desirable addition to these beautiful summer flowers.

THE DIVISION OF POMOLOGY of the Department of Agriculture at Washington, D. C., have adopted the Revised Catalogue of Fruits of the American Pomological Society as a standard authority on nomenclature, and have requested all fruit growers and nurserymen throughout the country to do the same, stating correctly that a nurseryman, through his catalogue, is an educator of his patrons to a large extent. This is a commendable move, and if the request is granted it will not only clear up much of the confusion existing, regarding the identity of varieties, but be of unusual advantage to all future purchasers.

EVERGREEN PLANTS like perennial poppies, *Heuchera sanguinea*, etc., are best wintered in a manner that the covering does not press or mat down on them. An easy way, when grown in mosses, is to lay small logs, posts or anything that will produce a solid foundation six to eight inches high, around them, then fill in with dry leaves or any light strawy, open material, and place a solid board shutter over them, resting on the logs. Have one end higher than the other in order that it may shed water. If no shutter is handy, cover with old boards lapped. If the group is small, invert a box over them. All this for those who cannot obtain evergreen boughs, which are one of the best of coverings.

CATALOGUES RECEIVED.

Thos. Meehan & Sons, Germantown, Phila., ornamental trees, shrubs, vines, hardy plants and fruits; Peter Henderson & Co., New York, bulbs, plants and seeds; Wm. H. Harrison & Sons, Lebanon Springs, N. Y., the Rathbun blackberry; F. R. Pierson Co., Tarrytown, N. Y., bulbs, hardy shrubs, trees, roses, etc.; J. H. H. Boyd, Cagle, Tenn., tree seeds; V. Lemoine & Son, Nancy, France, new plants, bulbs, seeds; A. W. Livingston's Sons, Columbus, O., pointers for lovers of flowers and house plants; Walker Fertilizer Co., Clifton Springs, N. Y., Excelsior plant food.

fect from the long voyage through such a variety of climates as the route over India, through the Red Sea and Suez Canal. It will thus be seen that the unsatisfactory results are not because of the disease, but because of wrong conditions which over-anxious dealers have brought about in their haste to place the bulbs on the market before they should have been. The plantsmen therefore who place their orders through responsible forwarding houses in Japan with open instructions not to ship until the conditions are most favorable, are the ones who can be relied upon to supply these beautiful lilies in the best condition.

THE GINKGO AS A STREET TREE.

Among the trees which will be popular for street planting in the near future is the ginkgo *Salisheria adiantifolia*, known also as the Maidenhair tree, from the similarity of the leaves to those of the Maidenhair fern.

One of the first persons to plant it in this country as an avenue tree was, if I am not mistaken, William Saunders, of the U. S. Agricultural Department. A row of these trees on both sides of the avenue fronting the Agricultural building, Washington, is now a conspicuous and beautiful sight. Lafayette Place is also planted with this tree. It was my pleasure to see the trees in both places referred to recently, and their appearance confirmed my previous opinion, that the tree is destined to be very much used for street planting. I think Mr. Saunders spoke favorably of the tree for this purpose in some notes from his pen in GARDENING some time last year.

The growth of the tree is more columnar than spreading. It will be much in place where tall buildings line the streets. Street trees are not wanted to become round headed.

The Norway maple, indispensable as it is, is not in the best keeping with many of the streets in which it is planted. There is too much spread of branches in proportion to its height. On streets with small sized houses it is just the thing, as it is, too, when set out on a lawn. Its spreading branches, clothed with large green leaves, afford a much desired shade. In the early years of its growth, because of its columnar habit, it impresses one with the idea of its being much on the order of growth of the Lombardy poplar, but this similarity does not exist as it adds to its age.

About this city there are some quite old trees, old enough to have been fruit bearing for many years. These are of quite compact growth. There are ample branches to afford them a good shade, which is what is required. Being a tall grower as well, it will take the place of the Carolina poplar, a beautiful and useful tree when young, but a great plague to its owner when old. Whether or not it will thrive in all sorts of situations as the poplar will, remains to be seen. So far it does not seem over particular in this respect.

To be popular for street purposes a tree must possess not only the requisites for the purpose in its manner of growth, but also the ability to bear transplanting well, and it must also be reasonable in price. In all of these particulars it is satisfactory. The habit of growth has been referred to. It is one of the easiest of all trees to transplant, rarely failing to grow, no matter if of good size when removed.

The large trees now in different parts of the country are seeding abundantly, so

that the tree can be raised as cheaply as most any other shade tree. Just how hardy it is remains for further trials to prove, but speaking for Pennsylvania and New York it is quite hardy.

Philadelphia.

JOSEPH MEEHAN.

HOW TO MAKE A MANURE BARREL.

A. G. L. wants to know how to make a manure barrel. If your place is of any size, requiring quite a quantity, try to secure a heavy cherry juice cask or a wine cask (of some wholesale liquor dealer), that will hold sixty or more gallons. Take out the head and by two cross bars of wood convert it into a cover. At a point six inches above the bottom insert an iron molasses faucet, set your cask up on some strong box or blocks, so that you can get a pail under the faucet. Make a rather strong table about eighteen inches high and just large enough to slip in the cask and stand upon the bottom. Secure a sound grain bag, one or two, according to the size of the cask, fill with solid manure droppings and place upon the table, then fill the cask with water. The table keeps the bag away from the outlet, and the bagging prevents the manure from choking it. The bag should be a strong one or it soon rots. The molasses faucet allows a fast free flow and will not leak until the cask is once emptied; add two-thirds water; fill the cask again and use one-half pure water. After filling the cask the third time, and adding one fifth water, the manure should be taken out and a fresh supply in a fresh bag put in, if more is needed.

TEMPERATURE FOR LILACS.

EDITOR OF GARDENING.—Will you please advise me at what temperature Charles X and Marie Legrave lilacs and the heath *Itaska splendens* should be grown and what treatment they should have throughout the year for winter growing? Sewickley, Pa.

H. A. DAVIS.

Both lilacs and heaths require what gardeners term a moderate temperature to get the best flowers. This would be

one of about 55° at night and 65° during the day. After a season of rest, with the falling of the leaf, which lilacs should have, a temperature of 50° in the day will start them growing, and it is better not to force them in too high a temperature. Lilacs budded on privet, as so many are now, are better bloomers when small than are those on their own roots, unless the latter kind have been grown in pots for some time, in which case they are in a measure dwarfed, which is what the privet does for them when used as a stock.

It is this dwarfing of them which causes early flowering. When spring weather comes plants that have been forced may be planted out of doors, to be lifted again on the approach of winter, and reforced if required. Or if in large pots or tubs they may be kept in them through the summer, and if a fair supply of young shoots are made, they will flower again nicely in the winter. Short, stocky growth on the lilac is what gives the flowers.

As soon as heaths have done blooming, repot them, giving fresh soil and a pot a size larger if required. As soon as the weather is warm enough to permit it, plunge them out of doors in a shaded position, there to remain till fall. Sometimes such a place is found on the north side of a building, or even one to suit them in a well shaded, open greenhouse.

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At this season of the year when planting is being vigorously proceeded with, I am often asked to recommend a few pears for family use. I have no hesitation in naming a half dozen which would be my choice were I about to set that number for myself: Clapp's Favorite, Bartlett, Seckel, Howell, Sheldon, Lawrence. They are listed in about the order I find them to ripen.

The Clapp's Favorite is the largest and most satisfactory of all the early pears. It bears regularly and abundantly. It needs gathering the first week in August with me, and to be kept inside in a drawer for a week or so, when it is splendid eating. If left on the tree later to ripen it rots at the core. Bartlett comes next, then Seckel. Seckel makes one wait a long while for its fruiting to commence, but its excellence of fruit compensates for it. The value of the Howell is underestimated. It does not set its fruit well when very young, but it entirely loses this feature when it gets of fair size, and in time becomes a prolific and regular bearer. Its large waxy yellow fruit is of excellent flavor. It ripens with me in the first half of October.

Sheldon, a rather flat, russet looking fruit, does not impress one by its appearance. No one would be prepared for the juicy, sweet fruit it is when fully ripe. Its time of ripening is towards the close of October. Lawrence is a standard sort of great reliability. The fruit is of fair size, lemon yellow, juicy and sweet. It is gathered in early November, not always quite ripe then, but because of freezing weather approaching. It keeps till about Christmas.

JOSEPH MEEHAN.
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The Fruit Garden.

OUT-DOOR GRAPES.

A verbal inquiry by a friend as to the best way to prune his grape vines at this season of the year, leads me to say a few words on the subject of pruning, which I hope will benefit some of your readers. I found my friend had been in the habit of cutting out a great deal of young wood from his vines on the general principle that more air and light were wanted by his vines, and he had, I think, weakened them by cutting out perhaps one half of the growing shoots.

Grapes do not want much pruning in summer if the work has been well done in the winter. It is certainly an advantage to the fruit to pinch off the shoot at two or three leaves above the bunch. The berries will be much larger than if the shoot be let grow as it will. After this pinching off the dormant eyes on the shoot will push out, and these, in turn, must be pinched off say to leave but one shoot. How much this pinching off helps the bunches is shown in the great size the leaves that are left attain, and it may be inferred that the berries, too, are receiving a share of the benefit, as indeed they are.

Where too many new shoots have formed, those not wanted should be removed. Try to let those remain that are nearest the ground, as there is a tendency in all vines to make new growth well away from the ground, and this is not what a fruit grower wants. It is well to have some new shoot every year, even when grapes are grown on the spur system. It is from the wood of the past season that fruit comes, and this must be kept in mind when pruning.

In addition to core pruning at this season there must be spraying done to keep the foliage healthy and to destroy mildew on the leaves. Many persons spray before this date, to prevent the starting of fungous spores. The bunches may be preserved by bagging them as soon as formed, and this system is largely followed in localities where damage to foliage rarely occurs. Bordeaux mixture is the preparation used.

Philadelphia. JOSEPH MEEHAN.

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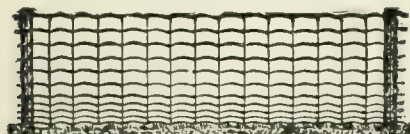
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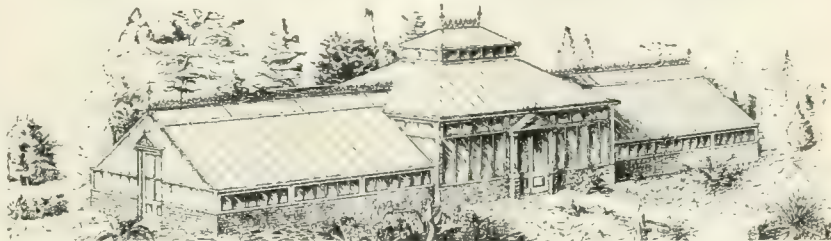
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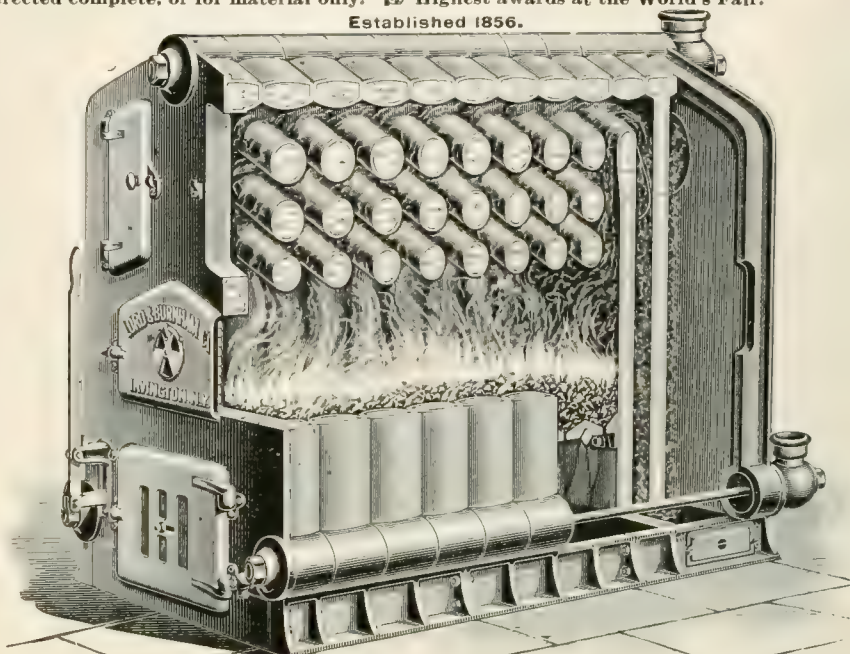
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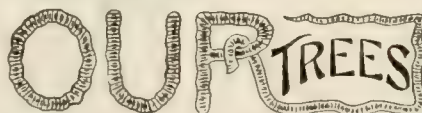
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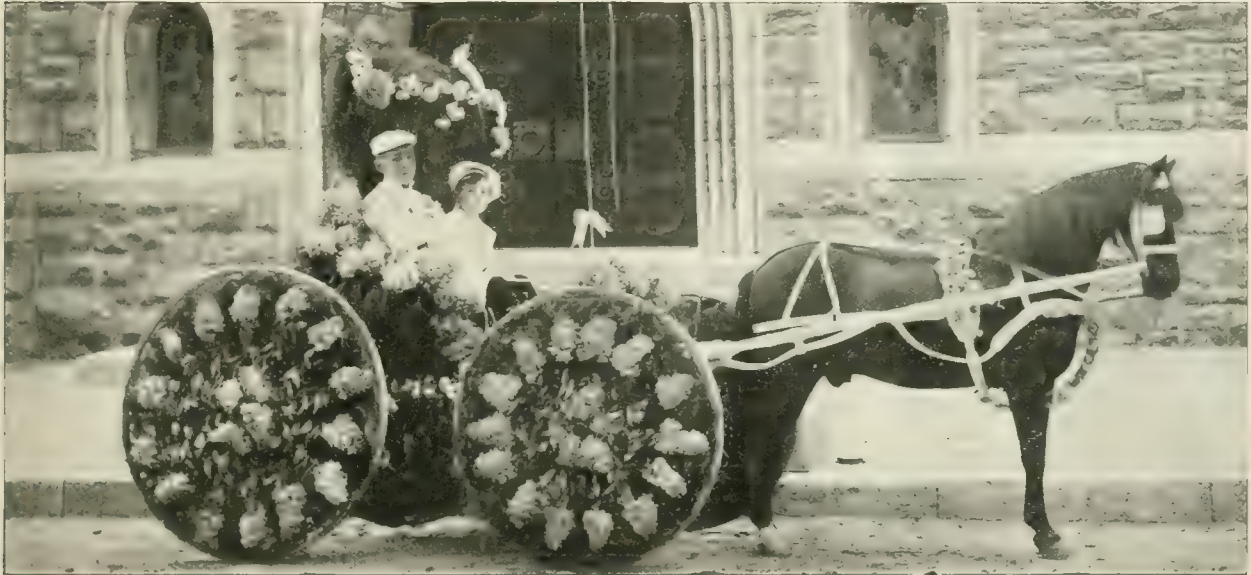
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No. 127.



PONY AND CARRIAGE AT THE SARATOGA FLORAL FETE, SEPT. 7.

Floral Decorations.

FLORAL FESTIVALS.

Away back in the mysterious past of ancient mythology we read of the use of flowers as an offering to the dieties. In later times we find the Romans using them profusely on all festive occasions. Coming down to our own times, and looking to the old world for a modern precedent, we find it in the annual "Battle of Flowers" at Nice, France. With the regard for flowers so strongly fixed in the American people, it is but natural that they should sooner or later repeat the festivities of their flower-loving ancestors. And it is quite in the order of things that the initial effort in this direction should be made in a section where flowers are as free as weeds. The first authentic record at our command is that at Santa Barbara, California, in 1892. Previous to this a day known as Floral Day had for some years been observed in the schools and churches. The expected visit of President Harrison to the Pacific coast suggested an enlargement of the Floral Day decorations, and an association was formed known as the "Santa Barbara Floral Festivities Association."

An extensive floral pageant was arranged. All the stores on the main streets were decorated and prepared for the triumphal entry of the Goddess of

Flora to the city. The result was a complete success. Since then many other cities have had their floral festivities, and we are pleased to present herewith some illustrations from photographs taken at the Saratoga, N. Y., floral fete last September.

A WRINKLE OR TWO ABOUT CHRISTMAS DECORATIONS.

The two most important materials now are holly and the vine commonly called Alabama smilax. The holly, perhaps the best known, is used partly on account of sentiment and largely because it is pretty. It is not as a rule permitted to do itself justice, however, away from its native woods. It is cut in small pieces, packed in cases and shipped to locations where a holly tree was never seen. A few pretty pieces to ornament a cake, to make a wreath for window, trim a picture or two, arrange in a vase with other suitable things are capable of many pleasing effects, but to make holly a feature in the decoration of a room or church the simplest and most effective way is to procure branches of trees without leaves. Cut such branches as will fit to arch over a doorway, up side of a wall or a small tree fastened to newel-post in front hall. Cover these branches by wiring on the pieces of holly, selecting the brighter pieces for the most conspicuous points. In this way you can get beautiful effects without any fear of monotony.

It is very simple and does not show that it is a manufactured tree.

For a dining room one of the simplest and most pleasing effects is to use tree branches, a large branch fastened to side-board and suspended over the table. Wire on bits of the "Alabama smilax." You will be surprised how much they look like apple leaves after you get them on. Then shine up a half bushel red apples and wire them on. It gives a most pleasing effect. If you cannot procure the Alabama smilax a few laurel leaves will do. If the room is a dark one use yellow apples.

In using the smilax the beautiful pieces of vine are easily arranged in many ways. but one suggestion may be valuable to many, particularly where something tall may be desired in the way of a plant. Take a common bamboo fish pole, arrange a specimen piece of vine to drape over the small end, which will cause it to bend some. Cover the whole pole making it some heavier at the base. It looks exactly like a beautiful tall bamboo and can be placed to project in so many beautiful and effective ways.

Another way to use many materials on a wall is to hang up a hammock spread out flat; twigs of green are easily pulled in the meshes to hold fast. Where cut flowers are wanted to keep fresh hang up a "Mason jar" with a wire from the picture moulding, filling half full of water.

There is quite a fad on now for colored or plain lights. They may be used to

good effect, but they are more often a detriment. If you have anything pretty to look at, have your lights so arranged as to fall upon the pretty part and at the same time avoid its shining in your eyes; also avoid having a light back of the branches you wish to have seen. Every leaf or branch which projects between your eye and the light will be black. Twenty-five electric lights or other lamps will ruin the effect of a beautifully decorated room unless they are placed very carefully. C. B. W.

the branches in close together, then taking some barrels with both ends knocked out, we set them one over the other over the magnolia till they outreached the tree, holding them in place between stakes sunk in the ground and tied with rope yarn, then braced with three spreading strips of wood. The lower barrel was filled full of leaves to save the roots and stem; the upper barrels contained nothing except the branches. Holes were cut in the south-facing side of the barrels for ventilation to help save the foliage from

slow growth, rather unfasten the ground and keep it heavily watered in summer.

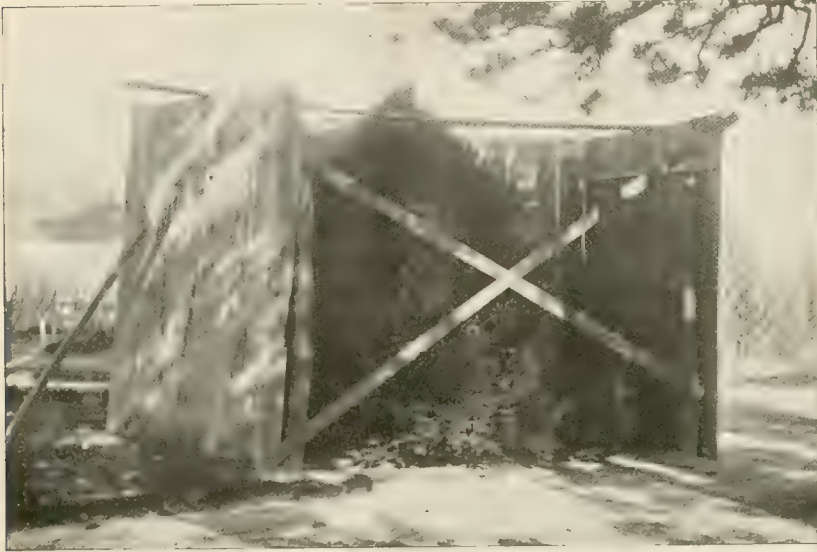
This question is also asked, "Can you suggest any book that will be a reliable guide in pruning shrubs? I am aware that some kinds need to be pruned in spring and others in autumn, but I have not the knowledge that would enable me to direct the pruning of my shrubbery, where there are several hundred plants."

I do not know of any book that would give you the information in the shape that I imagined you desire it, namely, in a form where each shrub is mentioned, and the suitable time to prune it given. While such a list would come handy to a beginner, it is not necessary if one will stop and reason out the question. There is a safe general rule applicable to the pruning of all flowering shrubs and trees, namely, prune immediately after the plant is through blooming. Nearly all shrubs are annual bloomers. With the exception of their period of rest they are occupied from the time they have matured their seeds until their next season of bloom in forming and maturing their bloom buds. There is a period (winter,) during which the plants are almost dormant; therefore it is natural to presume that the new flower buds are formed and may be ready to bloom during that part of the year in which growth is active; that is, during the summer.

A plant is only active, roughly speaking, during the time it is in leaf, consequently, in our climate all deciduous shrubs form their flower buds during the summer. These summer-formed buds flower either in the fall immediately following, or during the next spring. The *Hydrangea paniculata grandiflora* and the lilac are two good illustrations of this point. The hydrangea is a fall bloomer, flowering from buds formed during the summer of the current year. This shrub may be cut back in the fall, after blooming, or early in the spring before active growth commences. The reason is simple. There are no flower buds formed to cut off and destroy. How different with the lilac. It was forming buds all summer, and as it has not yet bloomed, we must presume it still has them. Go out and examine one. There they are, plump and juicy looking, merely waiting for the warming sun of April to unfold them. If we prune the lilac now, we trim off its bloom buds; but, if we wait until it has flowered, then, with renewed activity it starts to work on a new crop for the following spring.

The althæa is a fall bloomer, flowering on the wood made during the current summer. This shrub may be cut back after flowering, or in early spring. Where shrubs bloom in the fall, at a time when their period of rest (winter) is near at hand, they need not be pruned immediately after pruning. The operation may be deferred until spring, because the plant will remain inactive until that time. It is often best to so defer trimming, as a severe winter may injure terminal points somewhat, thus necessitating a further pruning in spring.

Some plants, like the flowering cherries, bloom on the old wood, two or more years old. These buds are formed during the summer and carried over winter. The wood of the current year's growth, that is, wood less than two years old, may be cut back in the spring or autumn without lessening the next crop of flowers, but it naturally restricts the quantity of old wood for the season. Some, as in *Spiræa Bumaldi*, bloom nearly continuously on new wood. Each terminal shoot as it is formed produces flowers. By removing



A WINTER DEVICE.

Trees and Shrubs.

PROTECTING SOMEWHAT TENDER PLANTS IN WINTER.

Our illustrations are engraved from photographs taken at Dosoris some years ago and show two ways of protecting somewhat tender trees and shrubs in winter. One shows a magnificent pyramidal specimen of the English yew protected on three—north, east and west—sides by means of a ten foot high board fence. There was no protection on the south side. The leaving open of the south side may be contrary to orthodox faith, but there's the living fact, and there it stood treated in that way for ten consecutive years and without once being "burned" on the south side. We used to treat *deodar*, *Cunninghamia Sinensis*, and some other slightly tender plants in the same way. Plants of these left in open places, also of *Lawson's cypress*, got sadly seared on the northwest side, for it is from there we had the prevailing winter winds.

The other illustration shows an arrangement of barrels used to protect trees and shrubs. It was in our nursery. Along the outside of the nursery we had a screen of pine branches set against a two-barred fence and tied there hedge-fashion. This was to break the wind from the northwest and check the shower of light sand that often would be driven from a close-by rolling vineyard against the young trees. Where the four barrels are set up chimney-like we had a fine plant of *Magnolia grandiflora*. We tied

falling. Under this treatment that magnolia lived and flourished and blossomed beautifully every year. When well established we discontinued covering it in winter, and it has lived nicely ever since and blossoms freely. The covering saved the foliage. Under the big upturned cask in front of the magnolia was a splendid specimen of *Berberis stenophylla*. With a good mulching over its roots and this cask we used to have one of the greatest golden glories in the way of a shrub one can imagine. Someone told me this berberis is hardy at Chicago, but surely this is a mistake, for it isn't reliably hardy on Long Island. Please send us a spray of the Chicago plant.

Now these pictures are only suggestive. We used to have single barrels, old boxes and improvised things set over lots of our treasures, such as furze, broom, Japan euonymus, evergreen viburnums, aucubas and the like, and it paid us too. Anything to keep the cold wind away.

WISTARIAS—PRUNING.

M. A. F., Troy, N. Y., writes as follows: "I have a *Wistaria Chinensis* that has never had a flower. Can anything be done to make it bloom? It has a strong healthy growth, and is twelve years old."

No better answer can be given than to quote in part from GARDENING, May 15, 1896. "Wistarias, especially when grown in deep, rich ground, and making luxuriant growth, often make much wood, and live through a good many years before they begin to bloom; but after they do start to flower they are likely to continue to blossom year after year uninterruptedly. If they are over luxuriant, stint the supplies, and pack the ground firm; if of

the faded flowers, and cutting in a little during the earlier part of summer, we induce new growth and new flower heads.

Shrubs like *Spiræa Van Houttei*, or any free flowering strong growing shrub, are much improved by cutting out the old flowering canes, immediately after blooming. While the bush may look a little ragged for a short time, this pruning lets light into the center of the plants and induces a vigorous growth of canes which will bloom freely the following season.

W. C. EGAN.

SPIRÆA VAN HOUTEI.

If further testimony is needed to insure the planting of this shrub in every garden its behavior this year should be recorded, for hereabouts it has been a wonder. Four plants, catalogued as "3 feet" and set out in the spring of 1896, were so wreathed with bloom as to nearly hide the foliage, and others noted flowered quite as profusely.

In an old garden filled with a greater and better variety of plants than the average garden this spiræa was particularly noticeable for its lack of pruning. Old wood that should have been cut out years ago, not only failed from lack of vitality to bloom well, but obstructed the egress of light and air that would have perfected the struggling younger growth that should have been in its prime, so that no part of the shrub was able to do well, yet both old and new wood "did what they could" to make the world flowery and prove the excellent intentions of this shrub of the people.

If only one shrub is grown *Spiræa Van Houttei* is a safe selection; and if a shrubbery plantation is to be made *Spiræa Van Houttei* may well head the list.

FANNY COPLEY SEAVEY.

JESSAMINE, AKEBIA, VARIEGATED HONEYSUCKLE.

In the last issue of GARDENING Mr. Meehan made a digression from his article on "Pruning Vines in the Fall" to advise his readers always to plant *Jasminum nudiflorum* in northern exposures, as the early blooms are apt to be killed by the frosts. How doctors will differ! I have mine against a brick wall on the east side of my house, and if Mr. Meehan could see it sometimes in full bloom in December, January and February, he would almost wish he lived in Rockingham, Va., so he could have his bloom the same way. Of course the open blooms are all killed when a hard freeze comes, but the next warm spell it will open new ones, and who wants to wait until spring for its bloom when we can enjoy it so much in the winter. Your correspondent wrote from Philadelphia, but the "Johnny Rebs" of the south enjoy a good thing anywhere they find it. Therefore GARDENING has many close readers among them.

[*Jasminum nudiflorum*, although a very beautiful shrub-vine, is not extra hardy. We did not find it reliably hardy at Boston; nor in cold exposures was it happy on Long Island; but in anything like sheltered places it formed large, sprayed clumps which used to blossom quite freely, sometimes in December, and if severe weather set in early, not till February or March. From New York northward give it shelter. About Washington it is one of the common shrubs of the garden.—Ed.]

I am responsible for printing that severe pruning late in spring would kill akebias, and here, too, climate may make some difference. Mine on my porch is trimmed by having the young shoots taken off any time they are not pretty, but cut a two-year-old vine after it begins to put out in spring (which it does quite early), and it

bleeds like a grapevine. I had one that had grown on my garden fence for years. When the fence needed renewing it was cut down, thinking it would, like a honeysuckle, soon cover it again, but, like a bad child, it cried and shed tears all day and night, keeping this up until the summer was most gone. The vine had laid on the ground and taken root splendidly in several places. These I dug up and gave to my friends, but they all bled themselves to death. This fence was made before any gardening was done. So when the editor of GARDENING asked me to give him any mistakes I had made I gave him this. Late the next summer a tiny shoot came up and has struggled into growth.

There is another vine that is beautiful when planted in the right exposure, the variegated-leaved honeysuckle. The late James Vick described it as a bush, when mine was creeping in at the upstairs windows. [True it is a vine, but you can also make a pretty bush out of it in sunshine or shade. Get an old tree root-stump, turn it upside down—root end up—and close to ground; then plant the variegated honeysuckle all about it to grow over it, and it will make a real nice variegated bush, and bloom prettily and last long in foliage. And you can add very much to the effect if you plant some crocuses, snowdrops, grape hyacinths, and early flowers of that kind in about the bush to brighten it up in spring.—Ed.] It is planted on the north porch, and so shaded by other buildings as scarcely ever to see the sun; there it grows and blooms to perfection, and is lovely now, when the late freezes have killed most other things.

There is a creeping, tender-looking plant at its root whose name I have never known; I send you a sprig of it, and will be glad if you tell me the name. [The purple deadnettle (*Lamium maculatum*), a hardy perennial, a native of the Old World, and a common, old-fashioned plant in country gardens. There is also a white-flowered form of it, and another with yellowish leaves.—Ed.] This enjoys its home, and looks fresh and green whenever not covered by snow, which often drifts into this corner three or four feet deep; but it and my evergreen ferns come out from under it as bright and fresh as if they had enjoyed their nap. This plant has a small purple bloom in the spring: nothing much. The leaves have a silver-white blotch down the middle of each leaf. This and the honeysuckle, like all other variegated-leaved plants, must not have rich soil or they lose their coloring.

LUCY G. CHRISMAN.

Rockingham Co., Va.

VINES FOR A WALL.

Although I have been a subscriber of your valuable paper but a short time yet I feel that it has been of more benefit to me as an interesting educator than any other source to which I have had access, so that I purchased the four volumes, and now begin to realize how little I know about this subject of the proper treatment of grounds.

I take the liberty of sending you under separate cover an amateur photograph of the southern portion of my grounds, in which you will note the bank wall running from "A" to "B." This is of native granite and has been in position about 30 years. It has a southern exposure, fronting on one of the main streets of the village. Can you give me the names of some vines which I could use to cover this wall?

The concrete walk at its base, when laid, made a tight joint with the bottom



BARRELS EMPLOYED AS PROTECTORS.

of the wall, but the frost has heaved it somewhat, opening a crack something like an inch wide. I suppose I could use Boston ivy in this opening if I could once get it started. Do you suppose it could be raised from seed in this condition? It is a very warm place, and the walk and wall will keep the ground from drying out where the roots would reach, but I fear that the snow plow in winter would be continually cutting the plants off at their base. Are there not some vines which I could plant at the edge of the

berries hang on it all winter. Japan honeysuckles might also be planted in same row to hang over wall, but it would always have a tendency to grow up into the barberry bushes. Yes, you need some planting about your place, especially vines to cover your porch and give the house a cosy home feeling.—Ed.]

WEeping NORWAY SPRUCE.

The typical Norway spruce is quite well known, having been first described in 1548. It is indigenous to northern

A GARDEN HEDGE.

A. J. C., Methuen, Mass., writes "Please inform me what would make a good hedge on a lawn that is naturally rather dry as it is made on top of sand filling, but which I have never had any trouble in keeping green, as I have service water which I used freely in dry weather. I have a few Norway spruces which have done very well. Would the fir balsam answer the purpose? It would have to be sent by freight a hundred miles. What season of the year would be best to ship



WEeping NORWAY SPRUCE

lawn above that would grow down over the wall and hide it, at the same time not interfere with the mowing of the lawn?

The place came into my hands about a year ago, and there was then a driveway between the large trees and the wall surrounded by hedges some eight or nine feet high. These I removed and graded the bank as shown in photo. I intend to work in appropriate shrubbery, etc., as I get light on these subjects from your paper.

W. D. W.

Springfield, Vermont.

[The "Boston" ivy (*Ampelopsis Veitchii* or as we believe we should now say *A. inconstans*) is the best vine we know of for the purpose, that is if it is hardy in your town, and we believe it is. Yes, you may try it from seed sown in the cracks of the wall and at the base of the wall, but the conditions are severe so don't expect much. Can't you take out a stone here and there near base and fill up with good soil behind that part of wall, and plant the vines in the apertures? This is what we would do. More than that we would plant a row of *Berberis Thunbergii* on top along the edge of wall so that the branches would spread out and cap the wall. It is neat and pretty all the time, never grows high and the leaves color beautifully in fall, and the

Europe, especially Norway, whence it receives its common name. Botanically it is known as *Picea excelsa*, the specific term signifying tall. Owing to some confusion in the early botanical works, it is often classed as *Abies excelsa*. The tendency to sport is strongly inherent in this species, and consequently we find many varieties of it, sixteen being mentioned by Nicholson. In the type, the branches naturally stand out from the tree at an acute angle, but droop slightly toward the ends by weight of foliage, when somewhat advanced in age.

We illustrate a variety known as *Picea excelsa inverta*, from a photograph taken on the grounds of the late A. S. Fuller at Ridgewood, N. J., whose well remembered form may be seen standing near it. As the writer remembers it, the tree stands about fifteen feet high, with a spread of branches of over twelve feet. As a rule, these inverted forms are not desirable for general planting, being more curious than dignified and effective, but once in a while, some position offers itself where one may be used. They are, when subjected to training readily induced to assume many odd forms, or may be made to take the shape of the one illustrated if trained upright to a stake. If left alone their outlines are weird and fantastic.

W. C. EGAN.

the plants? My intention is to keep the hedge well pruned in order that it may grow thick and not very tall. Would the balsam fir stand such treatment?"

[Don't plant balsam fir at any price. The best thing to plant depends on what thrives well in your neighborhood. The hemlock spruce is the loveliest of all hedge plants, if suitable for your locality use it, if it isn't, don't. The Norway spruce will serve your purpose well enough, give it a ditch of good soil to start in, and prune it before it gets lanky. American arbor vitae probably will answer better than anything, it is dense from the bottom. Give it a good pit of soil and don't spare water in summer. Plant in spring, and after planting for a couple of weeks sprinkle the plants overhead twice a day.—Ed.]

THE HOLLY-LEAVED OLIVE.

I send by to-day's mail a specimen of a shrub, of which I should be very glad to have the name. It was sent by a friend from the old St. Paul's church yard in Norfolk, Virginia. I held it were a specimen of the American, English or Irish hollies, but my friend said the sexton told her that this was not holly but an olive. As you can see there are tiny white flowers at the back, which when they came

were very sweet, though not so sweet as the *Olea fragrans*. My friend says that it bears oblong purple berries. I enclose a stamp so that you may answer by mail or in your December 1st paper, as is most convenient.

M. P.

Hagerstown, Md.

The plant referred to is the holly-leaved olive (*Osmanthus Aquifolium*) which is not infrequently mistaken for a holly; but whereas the holly has alternate leaves, this, like other members of the olive family, has them in pairs, at opposite points on the stem, so that it may always be recognized at sight. Not long since a variegated variety of the same plant was extensively sold in this country as a variegated form of the European holly.

W. T.

[If you turn back to GARDENING of July 1, 1893, front page, you will there find a very beautiful picture of *Osmanthus illici-folius* as it was growing in a shrubbery corner at Dosoris. Your plant (*O. Aquifolium*) makes a bush just like it. Both are Japanese evergreen shrubs of great garden merit where they are hardy. Although under very favorable conditions they are hardy on Long Island they cannot be depended on north of Philadelphia. One of their most desirable features is the myriad of tiny white flowers that appear all over them in October and November.

—Ed.]

The Fruit Garden.

THE SAN JOSE SCALE.

Readers of GARDENING should be on the watch for the San Jose scale on stock they introduce into their grounds, for it is beyond dispute that the pest is widely scattered. As correspondent of several horticultural and agricultural papers the writer has received many letters which indicate that the insect is present in almost every State in the Union. The prominent nurserymen have had their stock inspected by State officials, and those whose collections have been found clean have had certificates of the fact given to them. These are, of course, very satisfactory to purchasers, but still the point I wish to make is that every one should inspect his own stock. A thorough inspection of trees and shrubs should be made at stated periods to ascertain if all is well. The chief host trees and bushes are fruits. The large fruits of all kinds and currants, gooseberries and the like are what the pest prefers, though like most other things it has been found to take to other trees when fruit were not abundant enough. Recently there came to me a few peach twigs so full of this scale that not a bit of bark was visible. One scale overlapped the other. It was sent for identification. It was with grief I had to write the sender that it was the scale, for in his letter he had stated that some 100 peach trees through the center of his orchard were covered as the twigs were, and the best advice I could give him was to dig up and burn the whole lot as quickly as he could. But as he had said that apple trees surrounded the peach trees, it is more than likely that the whole orchard is practically ruined, for once this scale gets a lodgment in an old orchard it will be next to impossible to free the trees of it perfectly. With younger trees, when taken in time, there is a better chance. Besides whale oil soap, kerosene

and the prepared mixtures now kept for the purpose by the leading commercial houses, Mr. William Saunders, of the U. S. Agricultural Department, Washington, has recently called attention to the old-time remedy of lime and sulphur, made into a wash and applied to the trees, which is, he says, as good as it ever was, killing scale insects of every kind. With the fall of the leaf in autumn the trees should be given a washing with this compound. This will probably adhere firmly even up to the advent of spring, but should it seem desirable the work could be done again toward the approach of spring. As this scale is incapable of spreading except as it goes from branch to branch, if newly introduced trees are watched the danger from it is not great. Neighbors' trees are known to have been the source from which slightly distant trees have become effected. The introduction in such cases has been thought to have been

gicides and insecticides has been forced on all of us.

JOSEPH MEEHAN.

Philadelphia.

ADVANTAGES IN MULCHING STRAWBERRIES.

Strawberry beds should not have too much covering over them. I know several authorities say cover lightly in the beginning of the fall and later give them another dose and cover deep. This is all wrong. A light covering made in November is all that is necessary. The object to be gained is to keep the frosts from heaving the plants out of the ground, and a light mulch answers the purpose. The strawberry is a hardy plant, which can and does withstand a low degree of temperature with impunity. In the spring the light mulch admits the sun early to the plants, through which the leaves can easily pass. If the mulch is heavy it will have to be raked off early in the spring,



THE FIRST PRIZE LADIES' BICYCLE AT THE SARATOGA FLORAL FETE, SEPT. 7.

through the feet of birds as they hop from tree to tree.

Insects of all kinds as well as fungi have long been the bane of fruit growers as well as of those having collections of ornamental trees, and spraying with mixtures which are now known to be effective will have to be systematic. It is a pleasure to add, in concluding, that the possibilities in fruit growing have been largely increased since the use of fun-

for many of the plants will not be able to break through and then they will die. The success of the bed arises from the many plants and not from the few which have succeeded in pushing themselves through the great mass of mulch. The last advantage gained is in the moisture kept alongside the plants by the mulch—the partial shade—and here I would like to say that it is good policy to fill the alleys deeper with the mulch than on the

plants, for many place the mulch only on the plants when they should cover all the land.

THE STRAWBERRY FUNGUS.

My young seedlings are not free from the leaf blight. This does not trouble me. When we consider what the leaf blight is and how it works we can tend our plants in such a manner that the blight troubles us not. All observing strawberry growers know that the blight only attacks the old leaves which have their growth after the bearing season in new beds. Now, by yearly renewals (which are not hard to make) we can keep the blight in a great measure in check. To be sure we plant in our renewals plants with diseased leaves. But throughout the winter these leaves die and a young growth comes in the spring with all clean leaves which carries the fruiting plants along to maturity. In yearly renewals the fruit is always of the finest quality and in the greatest abundance.

F. K. STEELE.

Festus, Jeff. Co., Missouri.

The Greenhouse.

TWO NEW CHRYSANTHEMUMS.

Prominent among the numerous new chrysanthemums seen at the late exhibition were the two varieties William H. Chadwick and Mrs. C. L. Peirce, illustrations of which are presented in this issue. The former is a variety of much promise, the flowers being of the largest size and white in color with a slight tinge of pink. Mrs. C. H. Peirce is a fine clear yellow, the flowers of good size with florets very strong in texture.

There are, of course, many new varieties to which we would like to refer, and while space will not permit it at this time, we hope to be able to call attention in an early number to all new sorts of real merit.

SIMPLIFIED CHRYSANTHEMUM CULTURE.

In a recent number of *Lyon-Horticole* Mr. F. Marchand describes his method of avoiding the usual repeated pottings of chrysanthemums, saving thereby much of the labor and promoting the growth of the plants.

The cuttings from the best stems are not to be taken before the latter half of April, and are started in 2½-inch pots in a mixture of three-fourths sand and one-fourth leaf mold. Pinch back when five or six inches high. In May pulverize and richly manure the soil in which they are to grow. Let it be in full sunshine and, if possible, sheltered from wind. In this sink 6-inch pots, with their bottoms knocked out, leaving their brim above the soil and at a distance of two feet apart each way. Fill the pots with the following compost: One-fourth leaf mold, one-fourth hot bed soil and one-half garden soil. In these pots the plants are set about the last of May, preferably on a cloudy day. Give the same care as if growing in pots, only they need much less water. Apply sulphur and sulphate every two weeks. About the middle of September the plants are transferred to 9-inch pots, using a compost of well rotted mold, with one-quarter sand and one-third simple soil. Good drainage, preferably of charcoal, is strictly necessary. The 6-inch pot is to be dug up with



NEW CHRYSANTHEMUM WM H. CHADWICK

the soil, and all the roots and soil which extend beyond the bottom are cut off with a knife. After lifting the usual care is to be given as if otherwise grown. For the production of fine plants and development of the largest flowers, Mr. Marchand says this method is much superior to continuous culture in pots. E. R.

CAMELLIA JAPONICA.

The camellia is a shrub well worthy of cultivation for the decoration of the greenhouse in winter; its elegant form and laurel-like foliage make it a decoration plant even when not in bloom. Why it is not more generally grown is probably owing to the prevalent demand for cut flowers with long stems. For cut flower work three or four inches of the wood may safely be cut along with the flower, and a piece of annealed wire run

through the calyx to prevent the flower falling from the stem.

Twenty years ago I had charge of a specimen that used to bear annually over four hundred to six hundred blooms. It was that fine old white variety, *Plena*, and was planted in the greenhouse. The flowers were sold at 15¢ per dozen—about 12 cents each. The white-flowered varieties always commanded higher prices than other colors.

But apart from its usefulness to the flower trade, which should not be the sole criterion in our appreciation of plants, the camellia comes in very handy to fill the space left vacant by chrysanthemums.

It is of very easy culture, standing without injury. This plant does not "force" well, as if subjected to much heat.

when brought in it is likely to drop its buds. Consequently the only way to have the plants in early is to give them a brisk heat while making their growths. As soon as they finish their growth they will form their flower buds, and the earliest formed flower buds bloom first. If large flowers are desired they should be disbudded to one terminal bud on each shoot.

As soon as they are done flowering they should be repotted in well drained pots, taking care to put a layer of moss or fibrous sod over the drainage. The compost should consist of three parts good fibrous loam and one part leaf mold, with the addition of some clean sharp sand. Pot firmly as for heaths or azaleas.

Plunge the pots outside in summer time, putting a shovelful of coal ashes in each hole to keep out worms, and shade them from direct sunlight with a lath screen. While making their growth they should have a brisk heat, especially if wanted for early flowering, with frequent syringing overhead and a liberal supply of water at the roots. After they set their flower buds they require less water, but should not be allowed to get over dry.

Camellias are propagated by taking cuttings of the free rooting single-flowered sorts on which the double-flowered varieties are grafted or inarched. One of the best for a stock, says Henry Bird, of Newark, N. J., a florist who raised thousands of them and served under Robert Buist, of Philadelphia, thirty years ago, is the old crimson double sort known as Sarah Frost.

The shades of color in the varieties of this beautiful plant are numerous, from purest white to deepest crimson, and there is no reason why this plant should not once more become popular and brighten up our conservatories during the dull winter months.

Orange, N. J. WM. FITZWILLIAM.

THE CELLAR.

Those amateurs who grow a large collection of plants find themselves in the fall at a loss to obtain storing room for such of their pets as they wish to keep over for another year. The house cellar is a fine place in which to keep a great many things, providing it is not too cold and not too hot. A cellar with a furnace in it is a poor place for plants, as the air is so dry; but a room with a door opening from this will be all right, as the door can be left open when there is any danger of a hard freeze.

Among the plants the amateurs grow, the oleanders are generally great favorites. These can be wintered nicely in a light, frost-proof cellar, and as they are evergreen they should receive water when needed. Care should be taken not to apply too much, however, as they are not required to grow much in winter quarters. Century plants can be kept almost anywhere. They need very little water, about once or twice the whole winter will be sufficient. Orange and lemon trees will do in the cellar, but these should not be allowed to get too dry at the roots or they may drop all their leaves. Hydrangeas will need little attention and should be kept in a cool part; a little frost will not hurt them, but no water should not be given unless they become too dry, which is not often the case where the cellar is cool. The Abyssian banana (*Musa Ensete*), if grown in a tub, can be wintered in the cellar nicely, keeping it in a semi-dormant state. Should it be too tall, lay it over on its side and refrain

from frequent watering. The lemon verbenas, lantanas, fuchsias and plants of a similar nature, if planted in a box of moist soil quite close together generally come out all right in the spring, and the same can be said of English ivy. Caeti in variety will do all right in the cellar and should receive very little water. Aspidistras can be kept over nicely in the cellar as they are plants that stand a good deal of abuse. These are but a few of the plants that the amateur can keep from year to year in his house cellar; they should always have a little air when the weather is warm, and all evergreen plants, oleanders and the like, should be gone over and the foliage washed, as scale and the mealy bug are generally troublesome on such plants. Orange and lemon trees are very subject to the mealy bug; and the winter, when there is not much to do, affords a good time to get rid of it.

Bulbs of all sorts will do in the cellar, but the warmest place should be given to gloxinias, achimenes and fancy-leaved caladiums, keep them quite dry. Cannas with some soil attached to the roots will need little water, but they should not be allowed to dry up and shrivel for lack of moisture. Gladioli and dahlias can be hung up and kept quite dry. The main point to remember in keeping plants of all sorts in the cellar is to only give sufficient water to keep them plump. Do not aim to start them into growth; rather try to retard them, as growth made in the cellar is weak and disappointing.

DAVID FRASER.

PROLONGING PLANT LIFE.

Many of the handsomest forms of trees and shrubs in our gardens to-day are what are termed "sports." Some part of the type, generally a branch, has produced characteristics widely different from the true form of the species. It may be in color, or in the habit of its branches, as in most of the weeping trees. If the variation or "sport" assumes a desirable aspect, that portion of the plant possessing this abnormal growth is layered, that is, bent down and allowed to root in the soil and eventually severed from the parent stock, or is cut off, thus forming what is termed a slip or cutting, which has its cut end placed in light soil, and being properly treated, soon produces roots of its own.

There are other methods also of perpetuating the freak. These plants form what are known as stock plants, from which are propagated more of their kind. Cuttings or buds from these are also used for grafting or budding on similar species of normal form. Cuttings and buds may in years afterwards be taken from these now old specimens and young plants produced. This process may be carried on indefinitely, but in all instances a part of the original sport is preserved; that is, the life cells that in the original sport produced a varied character in its matured product, have continuously reproduced themselves, and the tree of to-day may, properly speaking, be considered a part of the original, although that tree died a natural death years before.

Prof. Thos. Meehan, in touching upon this subject says: "After all, what is the plant? 'tis but a single cell. Nearly all portions of a tree are practically dead after they get to be a year old, though we usually regard wood as dead only when it commences to decay. This decay will effect parts not so far advanced, and it is the increasing bulk of inert matter acting upon the comparatively smaller aggregate of active life that

results in the final death of the tree. When we take from a cutting the weight of these depressing conditions we give it new life. When the brakes are removed the car of life moves slowly on. It is the balance which decides the question."

W. C. EGAN.

CULTURE OF GOOD STRAINS OF SEED.

As regards the value of best strains of seed I would like to mention a striking illustration of the effects of culture on a single strain. About a year ago I procured directly from a leading European grower a quantity of Chinese primrose seed. It was distributed to one private and two commercial greenhouses. One sowed in November, another in February, but the private house not till June. The last sowing was not much later than the others in coming into bloom. In every case the flowers were finer than those I have generally seen in private or commercial greenhouses; but the difference in favor of those grown by the private gardener, a man of marked success with everything that comes into his hand, was such as to make one think they had come from an entirely different strain of seed. They were magnificent. To a casual observer the culture of the last differed from that of the others in these respects: unchecked growth from germination to flowering, a lower and more constant temperature, ampler pots, less crowding of plants, clean pots, and a better prepared soil. The lesson of the experiment is at least two-fold. First, the value of culture in reaching the finest results; secondly, the importance of equal conditions in comparative tests.

OBSERVER.

Plainfield, N. J.

[That sort of thing is vey common even in our own daily practice. Take stocks and asters in spring: We sow in February, prick off into flats in March, and keep knocking them around in frames till it is safe to plant them out in April or May, and they are invariably poorer than those of later sowings, say of April or May, because more stunted and cramped in their early life. Our intentions to begin with were good; we meant to pot them on or box them on and have fine big stock in bloom on Decoration Day, but our best intentions often get crowded aside by shortness of room and greater favorites. Take cosmos, for instance; late grown cosmos was always finer with us, when we grew and flowered it out of doors, than early sown plants. And as regards private and commercial growers. The latter depend largely on their workmen, who seldom take much interest in plants other than what are included in the limited cash-making stock. The private grower is broader and grasps after greater variety, and oftentimes like amateurs themselves he has a decided love for all plants and where his heart is his hands will be also, hence the extra care he bestows on new plants—Ed.]

WINTER MULCHING.—We are now having a good stiff freeze and can cart over the grass without any injury to the lawn, so we are hauling tree leaves to mulch under the rhododendrons, stable manure on to the cut over grass beds, fine rotted manure on to the hyacinth and tulip beds, and to spread over and between the hardy perennials anywhere in the garden. A good mulching of manure on the rose beds is not only a welcome protection to the roots, but in the case of somewhat tender sorts by heaping the manure well up against the base of the plants it so pro-



POMPON AND SINGLE CHRYSANTHEMUMS, CHICAGO SHOW 1897.

fects their crowns that should the stems get injured by frost the roses will probably start strongly from the ground line again. This applies to Bourbon roses especially. In fact, any plant regarded as being a trifle tender should be mulched at the root.

ZEHNERIA SUAVIS.

The above is the name under which an interesting member of the gourd family is registered in *Nicholson's Dictionary of Gardening*, although it is stated that its proper name is now *Melothria punctata*. This vine also bears the name of *Pilogyne suavis*, under which it is probably best known. It is a cucurbitaceous plant, closely related to our wild cucumber vine, sometimes called the balsam apple or Canadian mock apple. It is used quite extensively at Lincoln Park, Chicago, in large vases with other material, for summer decoration. It is a free grower, reaching a height of ten or more feet, producing many small white star-shaped flowers. It is a South African plant, and therefore not hardy. Cuttings root readily and are easily kept over in the greenhouse. What suggested this article is the use I put the vine to one autumn. I had planted several small vines at the base of the end of a porch. The floor of the porch came to within one foot of the ground. The opening between the floor and roof and the side of the house and porch pillar was about 8x10 feet. I ran strong twine across this opening, both ways, forming a net with a mesh one foot in width. The vine covered the whole space, and was quite ornamental. Late in the season, we gave a dinner, and as usual, did our own decorating. I had made the net-work of strings quite strong and so arranged, that by cutting the vine at the bottom, the whole mass could be taken down, as one would a blanket. Securing its greater percentage of light from one side, it had turned all of its leaves and flowers in that direction. It was taken into the dining room, and hung as a canopy over the table. Four young cinnamon vines were attached to

the latter and carried out to the corners of the room. These had been grown on strings, after the manner of smilax, and the strings retained, but hidden to give strength to the stems. By disconnecting the electric light globes at the ceiling, and parting the vine a little in the middle. We fastened the latter at the center, and let it droop some to the corners. The electric light globes were replaced, thus enabling us to have light underneath. The mass of leaves was so dense, each leaf being turned down towards the table, that nothing could be seen but the pleasing green of the foliage, dotted profusely with sweet-scented, small white star-shaped flowers. As the work was my own, I shall not enlarge upon its attractiveness, leaving that to the imagination of the reader.

W. C. EGAN.

NOTES.

Replying to the inquiry in the last issue of GARDENING as to the hardiness of *Ornithogalum umbellatum*, the plant is wild about Philadelphia, having been naturalized in the meadows for years. The ground is often undoubtedly frozen below where the bulbs are, so that it would indicate favorable chances for its success in Chicago.

Vitis Coignetiae needs moisture, Mr. Beard says. "Yes, that is what is wanted, I believe, atmospheric moisture." The vine is here, in Philadelphia, in several places, and so far without showing any color. Perhaps in some favorable season it will surprise us all and color as the *Ampelopsis Veitchii* does. The climate of Japan is much moister than ours, and this is why the lovely maples of the *polymorphum* type are more beautiful there than they are here. The foliage "burns" in our dry air. We have the heat but not the moisture.

Mr. Egan refers to lantanas. In the Philadelphia parks these plants are grown as standards. They are grown to a simple stem to a height of about four feet, then allowed to form a head, in which shape they are very pretty.

I would add to the list of satisfactory indoor vines for outside planting in summer parlor ivy, *Senecio scandens*, and the Maderia vine is useful. Perhaps the moon vine was not mentioned because it is looked on as an annual, but it is more than an annual, as plants taken up in the fall make big, vigorous ones for the next year. This is a much better way to treat this vine, as from the old plants cuttings can be taken through the winter, and these cuttings give stronger plants for spring planting than seedlings do.

Philadelphia. JOSEPH MEEHAN.

HARDY TREES IN PUTS AND BOXES — A few months ago we went East looking for some special stock of trees and shrubs, and in a certain nursery we came upon a lot of hardy magnolias, daphnes and Japan maples grown in tub-like boxes and pots plunged outside so that they could be handled or planted at any time. The plants were good, the idea excellent, and on the spot we selected the best plants he had and had them shipped to us. Now plants transplanted from these pots or boxes should never feel the change, but go ahead growing as if nothing had happened. In the case of the magnolias and daphnes it was a particularly good plan. Do more of it. We'll willingly pay more for such stock.

ASPARAGUS SPRENGERII is one of the recently new plants that has been a good deal advertised and boosted especially as a basket plant, and really it has a great deal of merit. But the florists have found a new use for it. At Mr. C. H. Allen's at Floral Park, N. Y., we saw a large greenhouse filled with this asparagus planted out in benches to give green sprays for cutting. It does not form long vines like *plumosus* but heavy open leafy sprays 2 to 4 feet long. When cut these sprays are elegant and long-lasting, and "make up" beautifully with cut flowers. It makes a fine basket plant for the window or veranda, and we find that it flowers and berries very freely.

Publications.

PROCEEDINGS OF THE SOCIETY OF AMERICAN FLORISTS, 1897. Wm. J. Stewart, Boston, Mass.—The report of the thirteenth annual convention of the Society of American Florists, held at Providence, R. I., last August, comes to hand in a new dress. In addition to the usual array of valuable papers and discussions, it contains some very serviceable lists of the plants introduced in America in 1897, including roses, carnations, chrysanthemums, begonias, sweet peas and other groups.

ANNUAL REPORT DEPARTMENT OF AGRICULTURE, 1897. Secretary of Agriculture, Washington, D. C.—This volume contains the general report of the secretary of agriculture, together with the special reports of the chiefs of the various divisions. From these we gather that the officials of the department are engaged in much work which should result advantageously to the flower growers and horticulturists of the United States. Especially commendable is the effort of the pomological division to provide a reliable descriptive catalogue of fruits, and the study of soils taken in hand by the chemistry division is a duty which calls for the best attention. It is unfortunate, however, that notwithstanding the great amount of labor bestowed upon the consideration of "diseases affecting plants under glass" by the division of vegetable physiology and pathology, the troubles of our greenhouse favorites are still among the things for which efficient remedies are unknown. Hurry up, gentlemen, or the growers will devise their own ways and means.

Exhibitions.

AMERICAN CARNATION SOCIETY.

We have received the list of premiums offered for competition at the seventh annual meeting of the above society, to be held in Chicago, Ill., Feb. 17 and 18, 1897. It is stated that papers will be presented by prominent authorities, including one by Prof. Arthur, of Purdue University, on "Moisture, the Plant's Greatest Requirement."

MASSACHUSETTS HORTICULTURAL.

At the last Saturday meeting of the above society, *Cypripedium Leeanum Clinkaberryana*, a new hybrid exhibited by Hon. C. G. Roebling, of Trenton, N. J., attracted much attention. Mr. James Comley displayed, among other interesting things, a fragrant camellia named Pond Lily, a new hybrid Himalayan rhododendron and a new datura from Japan, having flowers of creamy yellow with narrow purplish stripes.

GREENSBORO, GA., FLORAL CLUB.

The annual chrysanthemum exhibition of the Greensboro, Ga., Floral Club, Nov. 3 to 5, 1897, was a decided triumph of chrysanthemum culture. There are several amateur growers here whose work could not be distinguished from the professional. And what makes this success the more remarkable is that almost entirely the plants were grown in the open ground. The cut blooms were perfect in size, form and color, and were the

admiration of all who visited the exhibition. Mr. P. J. Berckmans, of national reputation, was most pleased, and the awards made by him were so satisfactorily distributed as to be evidence of a great deal of skill. The growers here understand propagating and preserving tested and approved varieties, and next spring will grow varieties that will make their mark in the commercial world. Each year the club has a plant for the entire membership to cultivate, and premiums are awarded to the three best. This makes an interesting feature as well as a fine display. This year the plant was a palm, and the exhibition was very handsome. Sometimes two chrysanthemums of different varieties are chosen and grown to single stems. This year the La France rose will be cultivated in bush form and exhibited in bloom. One feature of the late display was as marked as it is rare, namely, the artistic effect of the whole. In these exhibitions everything is ruled out that is not in perfect taste.

Artistically, florally and financially the past exhibition was a decided stimulus to future endeavor.

MRS. JAMES B. PARK.

WHY GOOD MEN COME TO AMERICA.—A public body in England recently advertised for a superintendent of a cemetery. He had to be "gardener, caretaker, cashier, accountant, and supervisor of headstones; to clean and heat all chapels; to disinfect and clean mortuary and receive all bodies; to attend all funerals, and act as sexton, to receive certificates and attach the same to weekly returns; to attend upon the officiating clergyman for the purpose of filling up and signing a book giving all the particulars of a funeral; to attend at coroner's inquests, also at all committee meetings; and the supervision of grave-digging, and the grounds generally." And all this for the munificent sum of \$7.50 a week! Now Johnnie Bull, are you a fool? A job like that's a Fagin's school.



NEW YELLOW CHRYSANTHEMUM MRS. C. H. PEIRCE

GARDENING

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SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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MR. C. H. SHINN of California is spoken of as the next editor of *Garden and Forest*. Our late lamented friend Mr. W. A. Stiles edited the paper from its inception till a few months ago.

A SLIP-SHOD YARD.—Even an empty yard, if it is clean and tidy doesn't look bad, but a rubbishy rag-tag yard is a disgrace to anybody. Because the winter is here and everything out of doors is at a standstill doesn't justify us in the least for having our yard all littered up and forsaken.

SCARLET AND CRIMSON CARNATIONS.—At Mr. C. W. Ward's on Long Island the other day, we saw two splendid new carnations, they were Maceo, a fine crimson maroon, and Flame, a large glowing scarlet. There were hundreds of each in bloom. This is not the Flame that was raised a year or two ago and then discarded, but a newer and much superior variety.

AS AN EDGING TO CROTON BEDS one of the prettiest and most appropriate plants we know of is the dwarf pomegranate. We saw it used very effectively for this end at the Botanical Garden, St. Louis. The pomegranates were also used with crape myrtles and very nicely. By the way, the intention is to use crape myrtles quite largely in summer beds after

this. The plants are hardy at Baltimore, and we know them to live at Philadelphia, but at New York they are not hardy. Better lift them in the fall and heel them into a frame or pit or cool cellar over winter.

BIG CAMELIAS, WHERE ARE THEY?—"Japonicas" maybe most of you may call them. They used to be great favorites, especially about Philadelphia; then they fell into disfavor, but they are being asked for again. We wanted to get some big plants, but had to content ourselves with small ones.

BIGNONIA VENUSTA is a vigorous, long-running, woody vine from Brazil and a favorite in greenhouses. In late fall and very early winter it bears the greatest profusion of crimson flowers that hang drapery-like from the slender vines. It is very easy to grow but rather long-running for a window. It is now in fine form and bloom in the U. S. Botanical Garden at Washington.

THUNBERGIA LAURIFOLIA is another winter-blooming vine those who can should grow. It comes from India, and blooms in great abundance, bearing large showy lavender blooms, but alas, while they are very beautiful on the plant they have no lasting properties when cut. This vine needs no great heat in winter and it may be treated successfully as a window plant, giving it a good deal of room.

MUSA COCCINEA AND M. VITTATA.—C. T. L., Williamsport, Pa., asks where he can procure these. We do not know. They are both very ornamental plants, *coccinea* of medium size has showy flowers, and *vittata* of large size has white variegated leaves. There is so little call for these plants that florists do not carry them in stock, there being no money in them. We, at Schenley, are looking for the same sorts.

RHODODENDRONS DON'T NEED PEAT.—You are right, and the sooner the people get that fad of peat out of their heads the better it will be for themselves and their gardens. Peat! Why we grow rhododendrons in the open field in loamy soil just as we do roses or lilac bushes, and we have been doing this right along for forty years, and know you'll admit that we have propagated and grown more rhododendrons than anyone else in the country.

AFTER CHRYSANTHEMUMS, WHAT? And Christmas so near at hand too! Well, we have a big show of *Salvia involucrata*, reddish purple and *S. leucantha*, bluish purple; Chinese primroses, bouvardias, cyclamen, stevia, golden flax (*Linum trigynum*), several begonias, poinsettias, carnations, tea roses, Zanzibar balsams, cannas, and a good sprinkling of orchids. In the way of bulbs we are shy of rushing, except Roman hyacinths and paper white narcissi.

THE GOOSE FLOWER (*Aristolochia Sturtevantii*) is the immensely big flowered tropical variety of pipe vine that bloomed in a greenhouse at the World's Fair and such a fuss was made about. A big plant of it bearing scores of blossoms is now in bloom in the Phipps conservatory at Allegheny. While it is a most curious and striking flower, not unlike a goose in form, when in bloom it is very malodorous, hence not desirable in a small greenhouse.

HEAT-LOVING PLANTS.—There is a general impression that some plants are so exceedingly tropical in their nature that

they cannot be wintered safely in a moderate temperature. Now, the fact is, that I do not know of any plant in general cultivation that must have a higher temperature than 60° at night in winter. First the plants must be strong and healthy and inured to this lowness of temperature, then study watering and general care-taking and altogether stop draughts.

A WHITE MAUD DEAN CHRYSANTHEMUM.—Maud Dean is one of the best and most useful of the pink-purple Japanese chrysanthemums we have, and it was with much pleasure we saw on Mr. Childs' place, Long Island, the other day, a white-flowered form of it. Except in color it is the exact counterpart of Maud Dean. This is its second year. The owner had several plants of it all growing together and very fine and decided they were. We at once got a plant for Schenley.

SOME FINE NEW CHRYSANTHEMUMS.—Mr. C. W. Ward of Queens, N. Y., writes: "Among the best of the newer chrysanthemums are Belle of Castlewood, C. W. Ward, Dorothy Devens, J. M. Woodford, Golden Trophy, Maud Adams, Modesto, G. F. Atkinson, Mrs. M. P. Raynor, Rose Owen and The Harriott." Another excellent grower of central New York recommends "Brooklyn, Australia, Dr. Parkhurst, Geo. S. Kalb, Duchess of York, Elvina, Lady Esther Smith, Defender, Midge, and Oriental Glory." As soon as the catalogues are out consult them for the colors and habits of these varieties.

COLORING CROTONS IN THE FLOWER GARDEN.—We use them largely and they do very well; the main secret of success is to have healthy, stocky, leafy plants well hardened off to begin with and not to plant them till the weather and ground are quite warm, say well into June. We turn the plants out of their pots and plant them out and let them stay in the ground till killed by frost, because we raise young plants enough so that we don't have to save the old ones. But Mr. Brown, superintendent of the public grounds at Washington, D. C., who also uses crotons freely in the summer garden, repots them some days before setting them into the beds and then instead of planting them he merely plunges them in the ground; the fresh soil in the pots gives them enough to live on in summer, and they lift in fall in good order, retaining every leaf, and are at once nice specimens for winter as well as summer decoration.

FIELD MICE.—What wretched pests they are, more especially in winter! If we mulch any of the plants before hard frosts sets in they at once take possession and cut every green thing within reach. Like musk rats in a root cellar it isn't what they eat at all that bothers us but what they cut and destroy out of pure wantonness apparently. And if they can steal into a cold frame it is Paradise to them and they repay your hospitality with gnawing off at the neck every living plant, be it rows of parsley or beds of pansies or violets. We must treat these vermin with merciless vigilance. They are exceedingly destructive to the foxgloves, bellflowers and pinks in our woods that need a little winter covering, and we hate to poison them there because of the number of ground squirrels and tree squirrels that are about and we are trying to preserve. But in the frames a little grain with a dusting of Paris green on it awaits their pleasure. They don't always eat it, though.



BOUQUET OF EULALIA JAPONICA

The Flower Garden.

EULALIA JAPONICA.

In the issue of GARDENING of September 1, 1896, we illustrated a bed of eulalias as grown at Egandale, and presented an article giving their history and method of cultivation. We now present an illustration showing the seed plumes of these plants, as arranged for decorative effect. The bouquet in question was shown at the last chrysanthemum exhibition of the Horticultural Society of Chicago, and was placed upon the front centers of the stage.

These seed plumes are everlasting, and will remain in good condition fully a year after cutting. To be seen at their best, the bouquet should be placed where the light is immediately behind it. This imparts to the feecy plumes an indescribable sheen that produces a charming effect. In this instance a powerful electric light was behind it. The two varieties used were *E. Japonica stricta* and *E. Japonica zebrina*, the stalks of the latter being about ten feet long when cut.

SWEET PEA HISTORY.

The *Gardeners' Magazine* gives currency to the following from a paper read by Mr. G. Stanton at a meeting of the Reading (England) Gardeners' Association:

Sicily, a large island in the Mediterranean, a few miles from the coast of Italy, enjoys the honor of being the native home of the sweet pea (*Lathyrus odoratus*), whence it was introduced into England in 1700—nearly 200 years ago. There is some uncertainty as to its original

color, some authorities asserting that more than one variety of the species came over. Philip Miller, however, in his "Gardeners' Dictionary," mentions it in 1731 as the "broad-leaved, soft, hairy chickling, with large and very beautiful purple, sweet-smelling flowers, commonly called sweet-scented peas." Chickling is an old name formerly applied to the pea or vetch. This must be considered good authority, and it gives us, as far as I can learn, the first reliable date of its existence after its introduction. I think purple or bluish-purple was probably its original color, as there is a tendency to revert to this more than to any other shade.

I have a copy of "Mawe's Gardener," published in 1800, in which annuals are ranked in three sections, and sweet peas are placed in the third, or lowest class, containing the hardest and commonest plants, so that its position at this date could not have been a very high one. The work mentions five varieties—the Purple, the Black Purple, White, Scarlet, and Painted Lady. This shows the position of the sweet pea 100 years after its introduction, or its centenary. Its bicentenary will soon be here, and, as it has become the custom in modern times to commemorate these periods in a favorite flower, we shall no doubt in 1900 show our due appreciation of this most beautiful of all annuals.

The variety of color in 1800 was very good, seeing that there were a white, scarlet, purple, and a bicolor called Painted Lady, and it is remarkable that the last named variety has retained its position up to the present day. In Page's "Prodromus," published in 1817, a striped variety is mentioned, bringing the number up to six. In 1842 a list was published which still contained only the six varieties, so that for twenty-five years

there was no addition to the number. In 1860 nine varieties are recorded in the leading catalogues. In 1865 what are known as the Invincible strains began. First the scarlets, then purples, white, striped, and perhaps the most beautiful of all, the Carmine Invincible. These were undoubted improvements on the old varieties, and are still grown. Fairy Queen, probably a sport from Painted Lady, now became known, and was soon followed by Crown Princess, Adonis, Butterfly, Princess Beatrice, Violet Queen, Princess of Wales, and a few others.

About the year 1877 the great improvement in sweet peas began. Mr. Henry Eckford, at that time gardener to Dr. Sankey, of Boreatton Park, in Shropshire, and who has since established a business at Wem, has done more than any other man to popularize this beautiful flower by bringing out a great number of charming varieties much improved in form, size and constitution, and of almost every shade of color, so that Eckford's name has become a household word in connection with sweet peas.

RUDBECKIA GOLDEN GLOW.

A correspondent writes in an English paper: This plant is not a very new plant to English gardens. It was introduced from North America nearly twenty years ago by Messrs. Smith, of St. John's Nurseries, Worcester, and offered in their catalogue by the name of *Rudbeckia laevigata*; thence it came into my garden, and though it does not increase fast, it has had time to find its way into most of the cottage gardens in the parish.

I sent the plant some years ago to Kew for identification, and it was there considered to be a variety of *R. laciniata*, though it differs in many respects from the type of that species. Asa Gray, in his "Flora of North America," considers *R. laevigata* of Pursh to be a dwarf form (a foot or two high) of *R. laciniata*, though he does not seem to know the variety. Our plant does not fit any *Rudbeckia* described by Asa Gray. Perhaps it may be a hybrid, say between *R. laciniata* and *R. pinnata* or *R. maxima*. This seems more likely, as I have never been able to find or hear of a fertile seed on the plant whilst *R. laciniata* ripens seeds freely in English gardens. It was figured in "The Garden" as "*R. nitida*," a species the characters of which it will not fit, though that too, has a var. *laevigata* (Nuttall said to be distinct from the *R. laevigata* of Pursh).

The provisional name *Rudbeckia Golden Glow* is safer than a conjectural specific name, but I think I have seen it in Barr's catalogue called Autumn Glory, and it would be well to obtain consistency in these fancy names. The flowers are remarkably long, often well into November, and few plants make so large a show from so small a base; it has also the merit of flourishing for many years in the same spot without interference.

[*Rudbeckia Golden Glow* is distinctly a variety of *Rudbeckia laciniata* and there is nothing dwarf about it and most surely it is not slow to grow. While its foliage has a certain resemblance to that of *R. pinnata*, we fail to find a trace of resemblance between *Golden Glow* and *R. maxima* or *R. nitida*.—Ed.]

ORNITHOGALUM UMBELLATUM.—Replying to an inquiry of your last issue, I beg to state that *O. umbellatum* is perfectly hardy in this region. JAMES A. HUNT, Winnetka, Ill.

HIBISCUS ROSA SINENSIS.

J. E. G. asks for information as to the best way to treat *Hibiscus rosa sinensis* stored in a cellar or cold house during winter and used for outdoor decoration in summer.

A cellar is a poor place to winter such a plant, as it is a tender evergreen shrub and should be kept growing all the time. This cannot be very well accomplished in a place so unsuitable; but if this course must be pursued the best way to treat the plant would be to head it in a little and only give enough water to keep it alive, never permitting it to become dust dry. Try to keep it in a semi-dormant state, as any growth it would make under such conditions would be drawn and weak. If it could be given a little warmth (say in the window of a living room) about the middle of March, this would cause it to grow and produce flowers much earlier than if left in the cellar till planting time. This hibiscus, however, always flowers better if grown in a tub, as by this method the roots are kept in confinement, and it is much more easily wintered in this way.

DAVID FRASER.

THE CHINESE MATRIMONY VINE (*Lysium Sinense*).—At Dosoris, the other day, one of the prettiest things on the island was a trellis fence about 5 feet high covered with this vine; although it was the 22nd of November, this plant was still in good leaf and its branch-wands were loaded down with vivid scarlet berries. It was exceedingly showy. It is perfectly hardy. We are propagating and planting it extensively at Schenley to hang over rocks and cut-down tree stumps. But remember it likes fairly good ground.

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THE SOY BEAN.

There are some things of the East that take a long time to commend themselves to the people of the West. We were a long while in this country before any attempt was made to develop the grain trade of India with Europe. The value of our Indian food crops is even now not appraised at its full worth. It is therefore not surprising to find that Dr. W. G. King, Sanitary Commissioner of Madras, has only just discovered the "soy bean," or "sooja" of the Japanese (*Glycine Soja*). Last week we published an article on "Lily Bulbs and other Chinese Foods," in the course of which the writer described the "sprouted seeds of the soy bean, and a small, square white cheese made from the same," as among some of the foods to be found in a Chinaman's store. Dr. King, in the letter we publish in another column, says that "it was only after long and persistent search in India and Burma that he ultimately obtained specimens," and he recommends the bean for cultivation in India as "probably the most nutritious form of readily assimilable pulse at present known." It will probably surprise Dr. King to be informed that this particular bean has been grown in India from time immemorial, and that the natives of this country know the value of it as a culinary vegetable.

It may be as well to describe the plant. It belongs to the great *Leguminosae* order, tribe *Phaseoleae*. It is an erect growing species, being unlike its other near relatives, which are mostly climbers, and bears a strong likeness to the common dwarf kidney or French bean (*Phaseolus vulgaris*), and has small violet or yellow flowers, borne in short axillary racemes, and is succeeded by two to five-seeded hairy pods. The seeds are like kidney beans in form, but smaller, and are made into a sauce by the Japanese, which they call "sooja," or "soy." To make this sauce the seeds are boiled with equal quantities of barley or wheat, and leaving the whole for three months or so to ferment, after which salt and water are added and the liquid strained. The sauce is used by the Japanese in many of their dishes, and is, in fact, one of their chief condiments, as visitors to Japan know; while the bean by itself forms an important addition to their soups. The Chinese cook the beans in various ways. The plant is, in fact, cultivated not only in China and Japan, but, as we have said above, in India also, for its beans. Dr. King's discovery is therefore nothing new. It is a common plant in upper India, and in December and January these beans are commonly met with in every bazaar. The seeds are sown from September to end of October, according to the season. The bean is well worth cultivating extensively as a *rabi* field crop. In this country the native market gardeners, by whom it is chiefly cultivated, grow it more as a garden crop, no particular stimulant being given to the soil. On well-manured soil it would probably yield an excellent crop.—*Indian Gardening*

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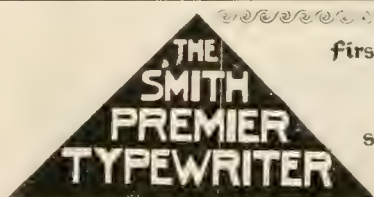
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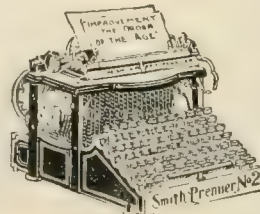
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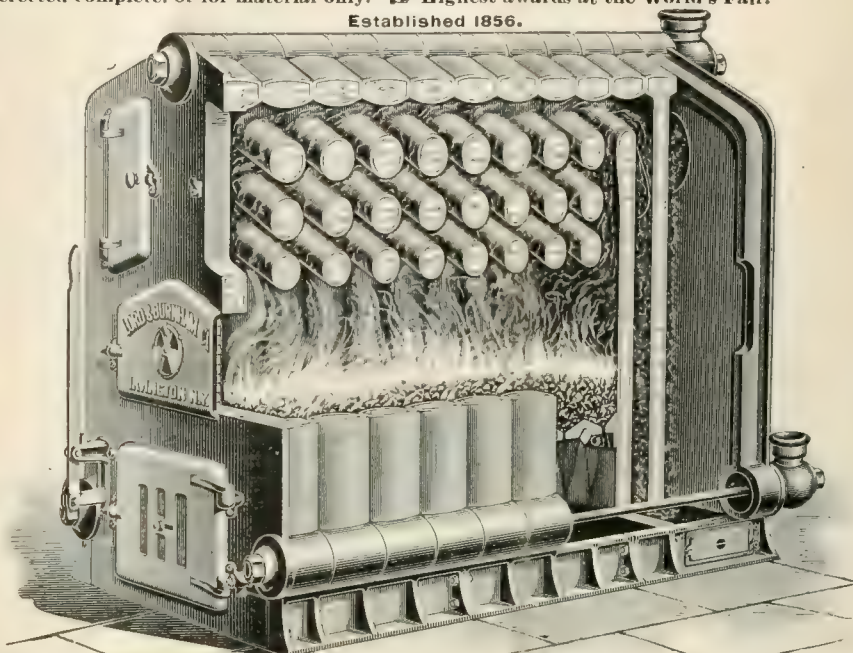
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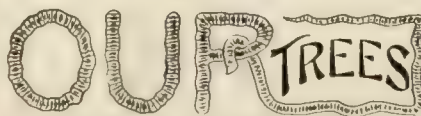
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WINTER SCENE IN CONSERVATORY AT WASHINGTON PARK, CHICAGO.

The Greenhouse.

PARK GREENHOUSES.

The extensive greenhouse structures attached to most park systems are too often employed as mere storage places. It is true that many of the rare plants required to embellish the grounds during the warmer seasons must find proper shelter in winter; but this can be done in such a manner as will provide proper protection, and at the same time afford the public fitting pleasure and recreation in return for the expense of maintaining its

property in healthy condition. In the construction of these park greenhouses, care should be taken to provide paths sufficiently wide to accommodate a goodly concourse of people without serious inconvenience to either plants or employees, and then it becomes a simple matter to arrange the plants so as to form effective groups or show individual characteristics.

The cost of public greenhouses has become so great in many cities that the taxpayers are inclined to insist on a better return from their expenditures than has been forthcoming in the usual summer display. And why not? The material is at hand and should be employed to the

fullest extent. It must, however, be said that some parks are making rapid progress in this matter, and doubtless many more will soon follow their example. Among others the Washington park at Chicago has made wonderful strides in the onward march, and we are pleased to present herewith some winter scenes in the greenhouses at that place which go to show what can be done when the work is taken earnestly in hand. Here we have palms, bamboos, dracenas, phormiums, pandanus, ferns, rubber plants, cacti, succulents—but the variety is endless. Look at the immense number of plants which can be turned to account for decorative purposes rather than huddled

together after the style of a jungle, but without the latter's grandeur of proportion and environment. A jungle in miniature? Bab! One cannot put a tent over the tropical wildwood and call it a jungle. That would be classed as a fraud; the other is little better.

These park contrivances are simply greenhouses, or conservatories, as you choose to call them, and their main purpose is to protect tender plants. Preserve them and their occupants in artistic order and system, as one would any other building and its furniture, and they may be made attractive; yes, even beautiful, instructive and restful places of public resort. But abandon that jungle idea ('t isn't good for the plants) and construct roomy greenhouses with broad paths; stock them with good material, and put in a few seats here and there for the weary ones.

NEW CHRYSANTHEMUMS.

A good review of new varieties appears in a recent number of the *American Florist*, but this is based altogether on the commercial utility of the plants. The florist from necessity must narrow down his list of varieties to such as pay him best, and the all important consideration for him is: Which varieties are the most profitable to handle? But these must also be considered from the amateur's and private gardener's point of view, and here the field is wider. The latter can afford to take in varieties which a florist would find unprofitable to handle, including odd colors and forms more in accord with the artistic, rather than the commercial idea.

Gold Standard, while lacking the commercial stiffness of stem, is nevertheless a grand variety. The color is equal to the better known Golden Wedding; it is different in form, reflexed instead of incurved.

Evangeline, white incurved Japanese, is an ideal bloom for all purposes. It is compactly built with a few recurving



WINTER SCENE IN CONSERVATORY AT WASHINGTON PARK, CHICAGO.

florets, reminding one in some respects of Kioto the gem of the Neesima set, sent out by A. H. Fewkes, of West Newton, Mass., some nine years ago.

Chito is a large bronzy, irregularly reflexed bloom of very fine form. Pluto, though a rather dull red by daylight, brightens up wonderfully under artificial light; one of those indispensable colors where variety is wanted.

Mme. C. de Galbert is a French novelty of great merit. It is a large, broad petaled white, with incurving, recurving and interlacing florets, a truly artistic flower.

West Newton is a lovely yellow of glistening buttercup shade, incurved with the florets swirled, though regular in outline; flowers sweet scented.

J. K. Woodford is a loosely, incurved globular flower of a pearly shade of pink. Some blooms come white, an advantage where variety is wanted.

Midge is a very dwarf white, and grand for single blooms or pot plants. This is not in favor with the commercial grower on account of shortness of stem, but we see no objection to it for this reason. We can make use of stems of varying length, and for table decorations these short-stemmed flowers are better than longer ones. The keeping qualities of Midge are superb; flowers will keep three weeks after cutting, changing in the meantime from a purely reflexed to an interlaced bloom, and pink with age.

Martin A. Ryerson proved splendid with us. It takes a long time to develop, but we like it better for that. From an apparently mature and rather flat flower it builds up until it is deeper than broad, showing the form of Niveus, with irregularly reflexed, flat petals.

Mizpah is a single flowered reddish pink and makes a pretty dwarf pot plant. The blooms when cut look like the single flowers of *Pyrethrum roseum*.

Adelaide is a very neat and dwarf variety, suitable for small bush plants. The flowers are white, and reflexed.

Casco, a splendid garnet red, is also fine for bush plants.

Dorothy Spaulding is an elegantly built, regularly incurved shell pink, as deep as it is broad, reminding one of the older Chinese incurved.

Halycon, a lovely white anemone with a high center, having the good quality of remaining in good condition a long time, changing in form as it develops.

Marcia Jones, another white anemone, is among the largest, and at the same time most beautiful of this neglected class. In this we have a few stray florets growing through the disk, giving variety of form and effectiveness.



WINTER SCENE IN CONSERVATORY AT WASHINGTON PARK, CHICAGO.

R. D. Douglas, incurved yellow, reminds one of Major Bonnaillon, still the most admired of incurved yellows, and now classed in England among the truly incurved varieties. This variety will be found easier to manage than Major Bonnaillon.

Lawn Tennis is a lovely shade of mauve, and promises to make a good pot plant. This will prove an acquisition, as such colors are scarce among varieties available for specimens.

Maude Adams is a buff yellow, large but rather flat, the monotony of a big flower is relieved somewhat in this by a few incurving petals.

Mrs. J. Withers is an elegant primrose of dwarf habit and irregular build.

in the way of Mrs. Alpheus Hardy.

C. H. Molin, bronze with reflexed petals interlacing the stem.

J. W. Richardson, incurved, pale yellow, slightly hairy, fine habit.

Pres. Leon Say, a grand deep yellow with broad swirled florets.

Pres. Carnot, reflexed yellow, very large.

T. D. HATFIELD.

VANDA SANDERIANA.

The illustration is a reproduction from a photograph of one of the most beautiful orchids known to cultivators, a well flowered plant of which is a vision of beauty not soon forgotten. This Vanda is a native of Mindanao, one of the Philippine group of islands, and was there

at the base of the leaves. These young spikes are a most tempting morsel for slugs and snails, and when the spikes become visible a little wad of cotton wool wound around them, will effectually keep the pests away, as they cannot travel over its surface. A piece of wool will be seen in the picture at the base of one of the spikes, and I may add that lately I have been kept busy placing the wool on the flower stems in the cool orchid house, for the reason that the mice came in the night and carefully unwound it to make their nests snug and warm. The mice are now treated to sweet corn, soaked in strychnine, which works well if the greenhouse cat does not find them after their last meal has been eaten. E. O. ORPET.



VANDA SANDERIANA

Sundew a peculiar bronze, incurved, of the shade of Morocco leather; a seedling from E. Molyneux.

Symphonia is a good deep shade of pink, early, dwarf and suitable for small pots.

Thanksgiving, peach pink reflexed, nice dwarf habit.

The Harriott, very fine incurved late pink, of splendid habit.

Edith Tabor, a fine pale yellow incurved and a prize winner in England.

Mrs. Weeks acknowledged by all as among the grandest introductions of the year among white flowered varieties; globular and mostly incurved, though there are a few interlacing florets.

Surprise, a large pink anemone.

Simplicity, a beautiful white, scored high in England.

White Swan, a fine hairy white variety,

discovered by the intrepid collector Roebelin, who after many unsuccessful efforts eventually added it to orchid collections. Two years ago I saw in London, a huge plant of this species just brought home by the veteran collector Boxall, who stated that he brought it all the way in his cabin; it was sold that same month to an amateur, who last year exhibited the plant bearing 127 flowers, and received a gold medal. This plant created a sensation among growers, and must have been a very fine sight.

Vanda Sanderiana requires what is known as the warmest house in winter, that is, one that does not go below 60° for any length of time, to do it justice, and in summer it will grow well suspended in a warm, shady corner of the greenhouse, keeping a good lookout in the fall months for the flower spikes which appear

BEGONIA GLOIRE DE LORRAINE.

It is to be regretted that this exceedingly attractive winter-flowering begonia is still very scarce, for in recent years we do not remember to have heard of a greenhouse plant half so well worth attention. The trouble seems to be that it is not readily propagated, as indeed should have been expected from its parentage. This plant is a hybrid of two very distinct species, *B. Dregei* and *B. Socotrana*. The former is a dwarf annual, bushy in habit, and from six to twelve inches high, with small, partially one-sided leaves and white flowers. *B. Socotrana*, on the other hand, is of about the same height, but there the resemblance may be said to end, for this is a tuberous-rooted species with large, round, funnel-like leaves of a deep green color, and deep pink flowers. *B. Dregei*, again, is a

native of the Cape of Good Hope, and blooms in summer, while *B. Socotrana* flowers in winter and hails from the island which has given it a name.

Two more distinct flowering begonias could hardly be selected from the long list known in gardens, and the hybrid certainly unites the characteristics of its parents to a remarkable degree. Resembling *B. Socotrana* in a general way, though the leaves and flowers are smaller, yet it lacks the tuberous roots of that species. The leaves, also, are lighter in color, and the flowers, produced in large quantities from October to May, of a more brilliant pink shade. We have seen *B. Gloire de Lorraine* in full bloom, and can safely say that begonia growers have been given a treasure in this new plant, which was introduced by Mons. Victor Lemoine, of Nancy, France, in 1891.

The excellent specimen shown in our illustration was exhibited at Boston recently by Mr. F. L. Harris of Wellesley, Mass., and awarded a silver medal by the Massachusetts Horticultural Society. Apart from the difficulty attending its propagation, which may disappear as the plant becomes better known, it is said to be much easier to grow than *B. Socotrana*, notwithstanding the fact that the latter has been in constant cultivation since 1880.

Trees and Shrubs.

AN EARLY WINTER GARDEN.

This having been until now only a summer place, I am enjoying the new sensation of sitting in an artificially heated room and looking out on the grounds clothed with the early snows of winter. From my windows I see mad white-capped Lake Michigan tossing its restless waves on the beach, and hurriedly recalling them as if in fear of losing its precious liquid. Sunlight and shadow play hide and seek far out among the billows, casting flitting shades of gold and amber on passing ships, belated and hurrying into port. At night the moonlight reveals the dancing waves, and peoples their crests with fanciful forms glittering in tints of gold and silver forever changing. It is the season of storms, the antipode of the peaceful river of gold that the summer moon always paints. All this is revealed through a peep hole amid the native trees, showing just enough to whet the senses, and almost create a desire for more. This is as it should be, for this very desire intensifies the appreciation of what is revealed, while more might satiate it. Turning to the lawn I find the greenward transformed into a freshly formed sheet of virgin snow, such a snow as one never sees in the soot-stained yards of city homes.

Semi-tender shrubs stand as sentinels on the border wrapped in their golden-hued straw overcoats, and guarding the flour barrels that shield the young tree pæonies from the winter's blast and prevent the too early starting of the buds. We have imbibed a military spirit from Fort Sheridan, only two miles away, and possess officers of higher rank for winter service than the straw-clad sentinels. These are found in the evergreens. We must not attribute to this group the trait of uncleanness, and accuse them of never changing their garments. They are skight-of-hand fellows, disrobing even before our eyes, yet in such a mystic manner that we do not notice it. We know

they do this, for the fact is evidenced by the quantity of pine needles they cast at their feet, but when and how they do it is known only to the professors. To the Colorado blue spruce we assign the colonelcy. The little snow that has lodged among its branches enhances the beauty of its glaucous sheen, and it is even more attractive than in summer, if that be possible. The needles of this species are sharp, stiff and pointed, repelling too much familiarity, just such traits of character as we attribute to a commander of forces. Next in rank comes the Douglas spruce, graceful in outline, and soft and gentle to the touch. That dark, fierce-looking shrubby tree, reminding me of an Indian recruit, is a bushy form of our native cedar, transferred from the woods on account of its beauty. Two forms of the inverted spruce are at opposite sides of the grounds, one an evergreen obelisk straight as Cleopatra's needle, while the other may be termed the buffoon of the camp, somewhat resembling a bear awkwardly endeavoring to walk in an upright position. This is the jester that while provoking mirth induces pity.

Looking to the right I see a tulip tree, grand and majestic of aspect. Straight as an arrow, its trunk tapering in beautiful symmetry, and mottled and streaked in harmonious tones of drab and gray. It has a dignity of its own that seems to say, "I am a tulip tree," as if it were the acme of tree ambition. Nearby in strong contrast to its regular form is a weeping beech, weird, tortuous and fantastic in mien. The branches here seem to have started out from the trunk with good intentions, then darted here and there in erratic indecision, assuming a form characteristic only of itself. Solid wooden shutters, six or more feet square, are placed on the windward side of favorite evergreens to shield them from unkindly blasts. After all they do not look as unsightly as I presumed they would, but perhaps the sympathetic feeling one has for these exotics, torn from more congenial climes and anchored here, dulls the artistic sense. From my dining room window comes a gleam of color standing out more brightly on account of the background of snow. The pendant clusters of the climbing bitter-sweet never looked so handsome, never hung so gracefully or seemed more brilliant in their orange reds. Slumbering near this one in its cone-shaped straw covering is *Magnolia Soulangeana*, almost a stranger in these parts, for I do not know of another in this section. When aroused next April, and unwrapped, this small tree will celebrate its deliverance by unfolding the white cup-shaped flowers, even before it puts forth its leaves; and while buckwheat cakes are still included in the breakfast menu, we shall enjoy its charms. Within range of this window there also stands an American euonymus, glowing with the pinkish red of its numerous fruits, sprays of which make good contrast with the white-berried branches of *Symphoricarpos racemosus*.

Glancing up, the still green leaves of the akebia on the porch recalls the splendors of the warm summer days, when its shade was so refreshing; but a chance look at the straw-covered honeysuckle over the entrance dissolves that dream, and tells again of Jack Frost's stern presence. Away in the distance the common privet still shows green, as do the hardier forms of the climbing honeysuckles, the latter further ornamented by the fruits. The *Rosa rugosa* hedge is yet bright with its red and orange-colored hips. The

leaves are brown, and the plants stand wholly unprotected, so different from their cousins, the hybrid perpetuals, that were put to bed some time ago with a blanket of oak leaves and a comforter of boards, while the more tender teas are ensconced in a snug cold-frame. In the more formal part of the grounds are beds of tulips, hyacinths, daffodils and scillas, occupying spaces set apart in summer for cannas and other tender plants and thoroughly covered with leaves. Looking out from another window, the scene changes. The Japanese weeping cherry throws out its long, arched branches, naked and slender, yet full of promise for the coming season. A weeping English hawthorn has a place not far apart, retaining most of its summer foliage. Accustomed to the London fogs, it seems to hang on to these leaves for use as a mackintosh in case one ever comes. It is taller and more pyramidal in form than the cherry and weeps only at the tips.

While I miss the mysteries of spring, the glories of summer, and the ripening shades of autumn's panorama, there is a beauty to be seen in the outline of every tree and shrub if one but studies them, and there is peaceful satisfaction in knowing and feeling that all are well cared for and resting contentedly.

Illinois.

W. C. EGAN.

HARDINESS OF THE GINKGO.

I am much interested in Mr. Meehan's note on this beautiful tree, the good points of which as a street and ornamental tree are not sufficiently appreciated. I wish however, at this time rather to draw attention to its hardiness and wide range of adaptability. In Canada as yet the tree is not generally known. The late Charles Gibb of Abbotsford, Quebec, (latitude 43°), planted it 15 years ago. In this severe climate it has made a slow growth, but with one or two exceptions has never been winter-killed. These trees have not blossomed yet. Throughout Southern and Western Ontario it is quite at home wherever it has been tried. Trees were planted at the Central Experimental Farm, Ottawa, Ont., eight years ago, which like those in Quebec have grown slowly but were injured appreciably two years ago when the thermometer at the Experiment station showed the temperature to have fallen to 30° below zero. Even with this trying temperature only two individuals out of several planted on the grounds suffered injury which took the form of bud killing rather than twig or terminal freezing.

I heartily concur in Mr. Meehan's estimate of the value of this tree for the purposes outlined.

JOHN CRAIG.

Ithaca, N. Y.

SOUTHERN TREES IN THE NORTH.

A friend asked me recently why it was that when he raised seedlings of sweet gum, *Liquidambar*, from southern seeds; they were partly winter killed always while young, while seeds gathered in Connecticut, where he lived, gave him seedlings perfectly hardy. It is not difficult to understand that plants accustomed for numberless years to what we term a high temperature, cannot at once accustom themselves to a lower one. Although the sweet gum is a native from the gulf states to New England the trees from the two ends of the line, for practical purposes, may be considered as distinct.

It is an interesting question to consider whether at some time the sweet gum, the



BEGONIA GLOIRE DE LORRAINE.

evergreen holly, the *Magnolia glauca*, the deciduous cypress and many other trees common north and south, have not sprang from a common centre, one wing going south and another north. In this case the one advancing northward pushed on into colder regions gradually, accustoming itself to the climate. Perhaps a seedling varied in hardiness at times, as we know weeds do, and the hardier one would hold on and form a parent stock for others of the advanced line. My own opinion is that trees can accustom themselves to a climate different from their own. It has been my good fortune to have observed for many years the behavior of oak trees and sweet gums raised from seeds received from near the sea coast in Georgia.

As your southern readers know, these trees grow to a late period in the fall, well into what is thought winter in the North. But in the North, growth is over, the wood ripened and leaves off before freezing weather comes. It is interesting and instructive to see seedlings of the sweet gum from the two sections side by

side. The northern plants will be bereft of foliage while the southern ones are as green as midsummer. This is why they are not hardy. The first freezing weather finds the southern plants with immature wood, and this is killed back nearly to the ground. I have seen this occur often, not only in the case of the sweet gum but also in that of pignut, oak and cypress. But the instruction is not all received in one season. The next season and many more, witnesses the same thing, but the seedlings gain intelligence, so to speak, year by year, and the evidence is unmistakable that they are making more of an effort every year to accomplish their growth in a shorter time.

Eventually they succeed in this, and then there are no more killed back shoots, and the tree is as hardy thereafter as its northern representative. It is this inborn tendency to keep up growth late that causes the loss of so many southern trees in northern gardens. There stands to-day in Philadelphia a nice tree of *Quercus aquatica*, the southern water oak, large

enough to bear acorns, which to my knowledge was partly winter killed year after year for a term of some ten years. It is now twenty years since the seed was sown, and for many years past not a twig has been hurt by freezing. I have asked men of much prominence in horticultural matters whether in their opinion a southern tree growing in the north did not in time become hardier, and have been surprised to have for their answer that they did not so believe. I am confident that trees do, in the way described, viz., by accustoming themselves to our seasons, ripening their wood earlier, and being thus enabled to withstand freezings which heretofore killed them.

I have not yet got as far as the raising of seedlings from such trees, but I am firmly of the opinion that such seedlings would be hardier than their parents in their early years, and that they would ripen up their young shoots and shed their leaves in good time, as northern trees should. The subject will bear investigation.

JOSEPH MEEHAN.

Philadelphia.

CATALPAS AS GARDEN TREES.

Our illustrations show another of the inimitable trees of Dosoris; both pictures are of the same tree and were engraved from photographs taken six years ago. The photograph of the tree in its leafless condition was taken the first week in May, 1891, and was meant to show the worst feature of this tree (*Catalpa bignonioides*) as a garden plant, namely, the lot of seed pods from the previous year that are still hanging to it and which keep dropping, some each day, till the tree has burst forth again into full leaf. While cheerfully admitting its handsome appearance, showiness and floral profusion and beauty among the trees of the garden, we cannot shut our eyes to the fact that it is also one of the most littery trees that we can plant, hence we would keep it away from the front lawn, and give it a place in the outer belts. The photograph showing the same tree in full bloom was taken in the second week of July of the same year. See what a beautiful tree it is!

But all catalpa trees don't look like this. Why? Because of that irresistible tendency among planters to trim them up, to cut off their lower branches so that one can look under them and that the grass may grow there. Look at our picture of the naked tree; if the upper branches only had been left and the under ones cut away you would have the ordinary shaped catalpa; now look at the tree in bloom and ask yourself which sort of tree you would prefer, one with lower branches full of leaves and flowers down to the ground or one that didn't have any lower branches? This evil of bare stems begins in the nurseries, the nurserymen prune up their trees for room sake, and handiness in packing, and more than all because their customers want naked stemmed trees.

Now let me horrify you: A few weeks after this beautiful specimen had its picture taken and had finished blooming we chopped it down and rooted it out! Why? Because we had other specimens of the same species in another place and needed the room for a Daimio oak and a Hungarian oak. These oaks although only six years planted have grown with great vigor and are now very handsome young trees. While it seems downright wickedness to cut out a tree like this catalpa, hard as they are, such things sometimes have to be done. Never hesitate to cut out a tree that is in the wrong place, or that is encroaching upon another that is more desirable to save.

This catalpa is the commonest one in cultivation, and is hardy from Boston southward; in the very rigorous parts of the country, however, it is not regarded as being quite hardy. About New York it is in full bloom during the first fortnight in July. The golden catalpa is a yellowish leaved form of it, and the leaves of another variety have a purplish tinge. And there is a much grown very dwarf flat-headed form of it named *Nana*, but in nurseries and gardens generally called *Bungei*. We have never seen this dwarf form in bloom or known of it to flower. *Catalpa Bungei* is a large vigorous tree, a native of China, and not yet in commerce in this country so far as we know. There are plants of it, however, in the country, distributed by Professor Sargent from the Arnold Arboretum, good plants being at Dosoris, Schenley Park and a few other places. The name *Bungei* as applied to the dwarf form common in cultivation should be dropped because it is an error.



CATALPA BIGNONIOIDES IN MAY.

The hardy or western catalpa, *C. speciosa*, (or *C. cordifolia*, as it is also called) is likewise a very desirable species, being quite hardy, easy to grow, and profuse, its flowers are whiter than those of *bignonioides* and a fortnight earlier. If you have room for them plant both.

The Japanese catalpa, *C. Kämpferi*, is less ornamental so far as its flowers go, than the two preceding species, but it makes a nice shapely tree, and even when out of bloom is distinct from the others, its seed pods being long and slender and grouped in big bunches. It is quite hardy at Boston, hence generally hardy.

Teas' Japan hybrid catalpa is of garden origin and a very vigorous tree, hardy and free blooming, its flowering season extending over a longer period than any of the others, but we never saw it as full of flowers at one time as we have seen *bignonioides* or *speciosa*.

To give you a precise idea of the blooming time of these catalpas let me quote from my diary:

DOSORIS, L. I., June 21, 1891.—*Catalpa speciosa* in full bloom, flowers larger and whiter than those of *bignonioides* and more beautiful; none of the latter open yet or nearly.

July 6, '91.—*C. bignonioides*, flowers began opening a few days ago, now at best and a few dropping.

C. Kämpferi, flowers beginning to open, greenish and poorer than those of the other kinds.

July 13, '91.—*C. bignonioides* in good flower yet but past its best. *C. Kämpferi* in best bloom.

July 26, '91.—*C. bignonioides*, all past some days ago. *C. Kämpferi*, nearly past.

WM. FALCONER.

NOTES.

In planting evergreens next spring, especially the family of pines, get them in as early as the condition of the soil will permit, and be very careful that the roots are not exposed to wind or sun for any length of time.

Spiræa Anthony Waterer, a variety of *S. Bumaldi*, which originated at the Knap Hill Nurseries, England, is one of the neatest and most pleasing of the border novelties of recent introduction. Perfectly hardy, it forms a close, compact, dwarfish shrub, extremely free in its blooms, which are a much darker and brighter red than in *Bumaldi*. This shrub has now been

long enough in the market, to be sold at a reasonable figure, and should be in every garden.

You may trim out branches of deciduous trees any time now, choosing mild days. Cut closely to trunk or large limbs, as then the growing bark or wood will cover the wounds. If the wounds are of any size, an inch or more, it is well to paint or wax them, in order to prevent decay until covered. In painting them use brown or gray colors. White is too pronounced, and green, sometimes used, presents a miserable contrast to the natural color of the bark.

Some may have planted trees or shrubs in too small a hole, and they are evidently not doing well. This is often the case with amateurs, and if the natural conditions of the soil are not conducive to thrifty growth, poor specimens are the result. While it would have been much better to have made the holes deep and wide at the time of planting, the defect may be overcome to a certain extent by digging a trench two or more feet wide and about as deep, around the outer edge of the old hole, filling it with good soil. This may be done almost any time, although early spring is probably the best, for some roots may be cut. At that season they will heal quickly and produce new feeding roots. Old trees that seem to be on the wane, from a deficiency of plant food within their reach, may be benefited by digging holes, here and there, eight or ten feet away from the trunk, and filling them with good soil. Tree instinct will cause the roots to find these deposits. Large trees suffering from prolonged droughts, similar to the dry spells of 1893 and 1894, may be helped by boring holes at different points within the circle of these roots, and inserting 3 or 4-inch sewer pipes, standing upright. Keep these well filled with water, for quite a while, until, from the seeping, the soil has become well saturated.

W. C. E.

The Flower Garden.

HERBACEOUS PLANT NOTES.

For low ground or near the water's edge, where the soil is moist or spongy at all times, we frequently find it rather difficult to select an assortment of suitable plants for the position. Experimenting is all right on a small scale, but when we are called upon to plant extensively, we must not run any risk by introducing species which have not been tried successfully under like conditions. It is not necessary that we should use only the so-called bog plants here and exclude all others, for we have quite a number of subjects which naturally grow on higher ground, yet they will flourish equally well in lower moist soil, as has been proved long ago by experience. Generally there can be no objection to introducing such moisture-loving grass-like plants as *Acorus calamus* and *A. gramineus* several of the carices, *Parnassia palustris*, three or four scirpus, arundos, typhas and butomus, also those semi-aquatics like *Menyanthes trifoliata*, *Calla palustris*, the arums and arisæmas, veratrums, etc., but we need more of a variety in foliage as well as in color and shape of flowers if the planting is to be effective at the different seasons. The calthas should be introduced in large patches; their bright yellow flowers come out in May and are very lasting, especially those of the

double varieties; *C. leptosepala* is pure white. *Mysotis palustris* is right at home in such situations, and when taken up and divided every year will bloom until September. Trilliums, thickly planted make a fine show in the spring months; the various ranunculus can not be spared here either, for they continue in good shape several months. Pulmonarias are among our first spring flowers and although not very gorgeous in color, their earliness is a strong factor in their favor; the foliage of *P. maculata* is highly ornamental throughout the season. *Mertensia Virginica* is sometimes included under the Pulmonarias; its flowers are considerably larger and of a very rich blue shade, decidedly elegant.

The epilobiums are tall plants, handsome in growth with numerous richly colored flowers in long spikes. *E. angustifolium album* is a pure white form. *E. hirsutum* blooms later and lasts longer, though the individual flowers are not so large. Spiræas of many kinds do admirably in moist places; the flowers of all are elegant. When planting them we should not forget the pink flowering *S. venusta* and *palmata*. The bright scarlet spikes

of *Lobelia cardinalis* and its varieties are very showy when in full bloom. *L. syphilitica* is not so tall in growth, and the flowers are bright blue. Trollius, both the European and Asiatic species are decidedly bright and gay; their globular flowers are larger and retain their freshness longer in moist ground than in the ordinary border. *Amsonia salicifolia* and *A. Tabernæmontana* are light blue summer blooming plants, very effective in midsummer when planted in masses.

The list given here is not complete, but it represents a fair collection of desirable material for planting in moist situations, where a large share of our hardy plants will not feel at home. The species mentioned have all been tried repeatedly with success, but I would avoid fall planting. Frost would heave out many of the plants the first winter, even if they had time to take some hold in the ground before hard freezing. The spongy nature of the soil does not afford the necessary resistance and the young roots have not multiplied or traveled far enough to prevent being lifted out by the action of frost, and covering is not always a safe remedy for this evil.

J. B. KELLER.



CATALPA BIGNONIODES IN JULY.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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PLAN NOW to get good seeds, and your garden will become a source of pleasure and profit.

A BOTANICAL GARDEN for Chicago is the most recent project, and the newspapers declare it is to be the finest the world ever saw. We say more speed to it.

FRESH VEGETABLES AND FRUITS from one's own garden are sweeter and more reliable than nine-tenths of the truck hauled about the country by peddlers of questionable habits of cleanliness. Grow more of the garden produce and less of the peddlers.

BOUGAINVILLEA GLABRA IS CONSPICUOUS as a greenhouse climber for bloom at this season. Unfortunately it is not suitable for a small house, making a good display only where it can be given plenty of roof space. The variety *B. glabra Sanderiana*, of bush form, is now quite popular, and makes a good pot plant in greenhouses of very limited proportions.

SOME ENGLISH BOOKS were recently received at this office. The books (that is, their contents) are excellent, the bindings villainous. A good book deserves a good cover. Speaking of books, we may add that so far there has been no complaint about either the binding or contents of the five back volumes of this journal. It may be said that, like the dress material selected by Dr. Primrose for his wife and daughters, these books both look and wear well.

REAL FLOWERS AND PLANTS AS PRESENTS are being substituted more and

more for the painted and lithographed tokens at holiday times, and it seems to be a most pleasing and desirable change. Palms, ferns and India rubber plants are popular for this purpose at all times, while Easter lilies, solanums, ardisias and little orange trees find favor more especially at festive seasons. This shows only a few names, but the variety of suitable plants is infinite.

SALES OF NURSERY STOCK BY AUCTION are perhaps common in some sections of the country, but we are not aware, as a correspondent writes, "that some prominent and respectable dealers regularly dispose of dying stock in this way." Such dealers, madam, are neither prominent nor respectable; they are notorious. But our fair friend is truly courageous when she adds that in purchasing a quantity of such stock, and placing the experience at its full value, she bought dirt cheap. Certainly; it is always better and cheaper to send to the nursery rather than the salesroom and buy such needed plants as one knows to be not dead but living.

THE HERBARIUM of the late Prof. Michael S. Bebb, of Rockford, Ill., has been purchased for the Field Museum of Chicago, at a cost of \$5,000. The collection contains over 50,000 specimens, representing 30,000 species, including the valuable material gathered on the Mexican boundary and Canadian Pacific surveys, and the Peary and Greely polar expeditions. Prof. Bebb was a recognized authority on the genus *salix*, and his herbarium collection of these plants was said to be second only to that at Kew, England. This herbarium, added to the collections of Schott and Mills-paugh, places the Field Museum in the front rank of American botanical institutions, especially on matters relating to willows.

ONE CHICAGO WAIF (there are many of them), a little girl, was selling Christmas greens in the bleak streets of the big city on Christmas Eve, and it was evident from her forlorn appearance and the amount of her stock that she was making small progress. Her lungs were too weak to enable her to compete with her sturdier masculine companions. Some passersby gave her a look of pity. A lady stopped and fumbled in her satchel for something; she didn't find it, and passed along. The girl's tattered garments spoke eloquently of poverty and suffering, and tears at last betrayed the misery of her soul. She had been crying a minute or two when a portly, bearded man in patent leathers, kids, melton and beaver passed that way. He appeared severe—a stern man of business. That was the external man, inside it was different maybe. However, he saw the girl in tears, suspected the cause of her woe, bought all her merchandise and hurried on. The man may have needed the greens; he didn't look it. One witness of the incident considered it a seasonable act of human kindness, and this chronicle of the facts will have served its purpose if it prompts one other to indulge his humanity by the application of a healing balm to some bleeding heart.

THE LATE JAMES BATEMAN, who died November 27, at Worthing, England, was one of the leaders in British horticulture. In association with the late Dr. Lindley, he did much to bring about the present popularity of orchids in European gardens, and his publications on these plants are justly celebrated for their accuracy and magnificence. Colley the famous

collector and G. Ure Skinner, both of whom are well and favorably remembered by the older generation of orchid men, were also numbered among his friends, and it is a pleasure to recall that even in these prosaic times there are numerous successors to pioneers so worthy. It must not be assumed from this that Mr. Bateman's endeavors were confined to the aristocratic orchids. Every department of horticulture was helped to a higher plane by the exercise of his kindly interest and powerful influence. The possession of great wealth enabled him to give material assistance where it was most needed, and he was as generous in its bestowal as he was practical in its application where the interests of gardening were at stake. Mr. Bateman was 87 years of age.

HEATHS ARE COMING RAPIDLY to the point where they cannot be dispensed with. Our growers seem to have discovered the peculiarities of treatment which suit them best, resulting in the production of presentable plants. The heath in its numerous varieties is very difficult to grow under the most favorable conditions, and it has been generally supposed that the high summer temperature of this country is antagonistic to its successful management. This difficulty overcome, there should be no trouble in duplicating the European collections which for so many years have been a source of pride to their owners. This is worth trying, for there are many beautiful plants among the heaths, and good specimens well repay all the effort they call for. *Erica hyemalis* and the varieties of *E. persoluta* are perhaps the best to begin with, as they are more easily grown than most of the other kinds; but when one has become familiar with the needs of these plants, the number can be readily extended to include many other species and varieties only slightly more difficult to grow. It is unfortunate in this connection that so far we have been unable to establish permanently in our plantations the hardy heaths (heather) which constitute so pleasing a feature of European landscapes, and yet, with further experience and an increasing field of observation, we may hope to overcome the difficulties of the case. Let us try again.

CAMPHOR TREES IN AMERICA are given some notice in a recent bulletin of the University of California, as follows: Attention has been widely called of late to the desirability of the camphor tree (*Cinnamomum camphora*) for growth in California valleys and foothills either as an ornamental tree or as a possible source of profit for its timber and for the gum and oil which are derived from it by simple distilling processes. The camphor tree was introduced to California at least 25 years ago and was among the first plants distributed from the University. There is therefore at the present time ample demonstration of the hardiness, drought-resistance, and beauty of the tree and, so far as its growth is concerned, it is an eminently safe tree to plant for ornamental or forest purposes. Concerning profit to be derived from its planting we do not undertake to give assurance. The tree is a handsome, broad-leaved evergreen, attaining large size, and noticeable by the characteristic light green of its foliage. It endures in California a temperature as low as 20° Fahr., and is probably about as hardy as the olive. It has endured without injury, a temperature that has killed large trees of *Eucalyptus globulus* and *Acacia mollissima*, and thrifty

trees can be found in California valleys as far north as Shasta county. It succeeds on a great variety of soils but makes its best growth on rich, retentive soil. The trees can be readily grown from seed, which should be planted in sandy loam in January or February, according to the time when the soil becomes warm, covered about one-half inch and kept moist but not wet. Growth in seed-boxes protected from cold winds, and with partial shade until the plants are in full leaf is to be commended. From the boxes transplant into nursery rows early in the fall, retaining the earth about the roots as much as possible and using water if the soil is dry. The trees endure transplanting even when of considerable size by the treatment usually accorded olive or orange trees.

GO DOWN TO THE CELLAR and look over the bulbs and roots that were carefully stowed away there in fall. Cannas, dahlias, gladioli, etc., may be safe enough so far as temperature is concerned but it is wise to be on the lookout for decay among these and other roots. Dahlias are especially subject to rotting, and this is an infectious disease which spreads with great rapidity among the tubers. Then the gladiolus corms need cleaning and sorting, and tuberous begonias also should be turned over and arranged by size, not forgetting to have an eye to the host of miscellaneous things which usually find shelter here. Cannas in particular need frequent attention, but in their case it is a liability to shriveling from a lack of moisture which constitutes the chief danger. The newer cannas do not store away so much vitality as those of a generation ago. The roots are smaller and it has been found an improvement on the old system of storage to place the roots of Crozy and Dammann varieties underneath the benches of a cool greenhouse, or in some such situation as will similarly afford them an opportunity to continue their growth at a moderate pace through the winter. It is suggested that the full activity of the latter should be maintained the year through—but that's another question.

CHRYSANTHEMUMS AND SWEET PEAS have enjoyed a wide range of popularity within a few years, and it now seems as if the public were to have still another floral idol in the dahlia. This plant has many good qualities, and there is sufficient variety in its flowers to please all kinds and conditions of men and women. The amateur grower will find more than one good corner for it in his little plot, and the shrubby plantations of larger estates will be much benefited by its presence. It is a plant of easy culture, affording a brilliant and interesting display at small cost. We have already one dahlia society in this country, but there is really no argument against each community having its own special committee or organization for the consideration of all questions concerning the plant. But by all means begin with the dahlias, reserving the place for a few of the best kinds now offered by the dealers. The dahlia, of course, is not at all a new plant, but some special attention has been given to it within the past two years with the result that many of the old and perhaps familiar kinds are not considered worthy of perpetuation. Try some of the new varieties, and look to these pages for advice as to their treatment at the proper season.

IMPROVE FACTORY GROUNDS by all means, and imitate the good work which is being carried on in this and other

directions by the National Cash Register Co. of Dayton, Ohio. This manufacturing concern has had the grounds about its extensive plant laid out in thorough style by one of our most efficient landscape gardeners, and now designs to educate the people of that region to an appreciation of the art in its application to town parks and home surroundings. Much, indeed, has been accomplished already, as we hope to be able to show by illustrations in an early issue. The adornment of home grounds and yards is encouraged by awarding liberal cash premiums under the following suggestive heads: "Landscape Gardening," "Best Kept Premises," "Vine Planting," "Boys' and Girls' Prizes," "Window-Box Gardening," and "The Best Vegetable Gardens." But the scheme does not end here. During the winter months, when comparatively little actual gardening can be attempted many evenings are devoted to able lectures covering the entire field and illustrated by stereopticon views of the best examples of foreign and domestic work. The enterprise is assuredly laudable and merits the highest degree of success. The moneyed powers of our numerous industrial towns and cities can do much on these lines to increase the value of their property; and even if that were mere imagining, which it is not, there is surely some pleasure in such reflection as follows a wise contribution toward the making of a happy and contented people. Awake and be doing.

The Vegetable Garden.

NOTES ON VEGETABLES.

One would naturally suppose there was not much to be said about vegetables with frost in supreme control of so much of our territory, but the fact remains that to the true gardener, whether amateur or practitioner, there is no time when he can say that all is finished. There is always a something that remains. In a somewhat extended experience in gardens, one trite saying remains still fresh as if spoken but yesterday. It was the custom of a gardener of the old school who was master of his art, to give a little talk to each new graduate as he was about to leave him, and a part of his advice was: "Always take care of the pot, lad;" and in after life we have noticed that if peace reigned in the kitchen, the government was safe for the time.

Very soon we shall be flooded with garden literature in the shape of seed catalogues, which, of course are gotten up to sell the seeds. If examined closely, one will see that in a dozen or more kinds of beans or peas, all are described as being "indispensable" or "invaluable" and so on until about all the superlatives are exhausted, and I am free to confess that it is difficult to choose what is best to plant from such a number of desirable kinds. Taking peas as an example, and working it out, however, we shall soon see that it is not so difficult as it seems at first sight. We want one or two first earlies, a kind to follow on, then a mid-season main crop, with some one of the tall sorts for late, five kinds in all to insure a continued succession from the time peas come in. All ought to be sown the same day, as soon as the soil is in fit condition to work in April, and it is our practice to sow again the same sorts as soon as the previous sowings appear above ground, planting none but the late kinds after the second sowing.

In this way we are sure of a succession of peas all through the season. The moral is, that each kind is valuable in its way, either at some period, in some soils, or in various climates, and all have their advocates or the sorts would soon disappear from the lists.

And now a word as to novelties in vegetables. It is a recognized rule here never to grow a novelty, except sufficient to test it. By the time it has been tested it ceases to be a novelty, and if a desirable kind, we know its season, quality and general utility. But to depend on an untried variety to fill a place in the garden calendar would never do, because it is an unknown quantity, very interesting perhaps to those who want to find out all about it, but one of the things that need to be "well shaken before taken." It must also be said that if one wants a good strain of seeds of a particular vegetable, one is apt to find it among those varieties of only a few years' standing. I would rather take a novelty of two or three years' reputation than an old established variety, for it is an established fact that it is impossible to get true strains of old, well tried kinds of many vegetables. They have either run out or been neglected, while a new thing is more likely to be kept up to the standard claimed for it by its introducer. It is best to plant strictly novel varieties sparingly and for trial only, relying on what you are sure will succeed in your garden for the main results for the year.

If the garden is situated on an unfavorable piece of land for the culture of vegetables, as often happens where small estates afford no choice, it is well to take a piece each year, no matter how small, and properly fit it for the purpose. This is best done by taking out a wide trench to start, excavating the unsuitable subsoil and replacing with something better wherever it can be obtained. We have had to remove in this way from beneath the whole of the vegetable garden a choice stratum of gravel, which in some places came up to within six inches of the surface and was easily visible in dry weather; but now all the soil is good to a depth of two feet with a layer of clay placed below it, and celery, peas, lettuce and such things as used to be hard to pull through a dry time, even with irrigation, are able to take care of themselves. In our case it was a big task, done at odd times, and the benefits are not to be estimated. If a trench be kept open, it is ready to bury refuse from the lawn, garden and the potting bench, and it is surprising how soon it is filled up and ready to be covered with the good soil from the top of the next trench. The safest and cheapest way to get plants to do well in dry weather is to have a deep root run, so that they can get down into the cool moist earth below.

There are many things that one raises in the garden that one cannot have enough of, and the season seems all too short. This cannot be remedied if there be no means of forwarding things under glass, but if the most be made of each while it lasts, we should hear less complaint. It is our practice to sow another row of all vegetables as soon as the last kind is above the ground. The row may be short or long according to the need of the family or space at disposal, but always sow little and often of peas, beans, corn, lettuce and such root-crops as beets that come quickly and soon become too old for use. Make succession the watchword for the coming year; aim to raise at least two crops from each piece of ground by planting or sowing late crops between

the early ones or where the early crops have been gathered. The soil will raise weeds anyhow, and killing these is not much more labor than taking care of another crop.

E. O. ORPET.

Massachusetts.

WINTER SALADS.

At this season of the year, when the kitchen garden is destitute of active vegetable life, we have to depend on the greenhouse and the cold-frame for our winter supply of salads. To have these plants throughout the winter is sometimes a difficult task, but every gardener should endeavor to provide a quantity sufficient for the needs of his employer's family, if the means at his disposal will enable him to do so. The lettuce certainly stands first on the list of salad plants. Sown in August, and transplanted in a cold-frame in September, the supply of

of young mustard, and this is found extremely useful in the preparation of salads. A place is readily found for mustard in any garden with a greenhouse attached. Given a little warmth, it will grow almost anywhere. It does nicely under greenhouse benches, and is best grown there, for in that way it takes up no valuable space. This crop may also be raised handily in boxes filled with light soil. The seeds germinate very quickly and should be sown in lines for convenience in cutting. The crop is generally ready for cutting in about twelve days from the date of sowing.

Cress or pepper grass is another very relishable salad plant, a good supply of which can be obtained under the treatment advised for mustard. But more seeds should be sown of the former to a given area, for the pepper grass is a much smaller plant than the mustard, and for this reason it should also be given a week

next month. We shall then take one of these roots every week and plant them in barrels placed in the cellar or underneath the benches of a warm greenhouse, covering the barrels so as to exclude all light from the plants. Rhubarb forced in this way is very tender, and it is always acceptable.

DAVID FRASER.

THE ST. JOSEPH STRAWBERRY.

A European correspondent, writing under date of Paris, November 15, 1897, has this to say about the new strawberry which is shown in the accompanying engraving:

The Paris fall exhibition of flowers, fruits and vegetables is now open. In the fruit line the Saint Joseph Strawberry is much admired. This is a real wonder, and quite a novelty besides; it is also an industrious little plant, having borne fruit without interruption from the beginning of June until the present time. I saw



THE ST. JOSEPH STRAWBERRY.

this vegetable may be prolonged through the holiday time. The frame, however, should be kept snug and warm giving plenty of air on all bright days. Any failure to properly ventilate the plants will result in a rotting of the leaves, which speedily spoils their usefulness as well as their appearance.

More seeds should be sown about the beginning of the new year, this time in a warm greenhouse, pricking off the plants into boxes when they are large enough to handle. A few may be grown on in 2½-inch pots, if time and space permit; but in any event an effort should be made to have the plants ready to put out in a hot-bed not later than the middle of February. Successional sowings treated in a similar way will maintain material to cut from until the outdoor crop is well advanced.

We have now (December 17) a fine crop

longer to grow before cutting. By sowing one or two small boxes each week, an abundant supply of this plant can be had all winter. Cress and mustard can also be grown very satisfactorily in the window of an ordinary living room, taking care to maintain sufficient warmth to prevent freezing during cold nights. We have also a few pots and boxes filled with chives, which will be left outdoors and moved to the greenhouse a few at a time as they are needed. In addition to their use in the preparation of salads, chives are also valuable for soups, etc.

Space should also be found in some corner of the greenhouse for a few pots each of sage, mint and thyme. These are much in demand at festive seasons, and good cooks generally prefer to use them in a green state. And we have dug up a few strong rhubarb roots, which will be left in the open, covered with straw, until

it all summer at Verrieres, where it is largely grown, and it was always covered with flowers and fruits, although given much freedom in the matter of making runners.

The plants now on exhibition were taken from the fields only a few days ago. The Alpine strawberry, of course, has been known in France for years, and some improved varieties produce very large fruits; but the Saint Joseph is a genuine large-fruited perpetual variety altogether different from the Alpine in size, shape and flavor. It may be said to be a fair improvement upon Louis Gauthier and other ever-bearing strawberries, no other variety being so great a fruit producer. The runners taken from the old plants this summer are already covered with bloom, and by simply keeping them under glass during the frosts of winter, they will give fruit all the year round.

Publications.

BOOKS AND BULLETINS.

TOMATO FORCING. NOVEMBER, 1897. New York Agricultural Experiment Station, Geneva, N. Y.—A brief review of some systems of tomato culture, with table showing that single-stem training is superior to the three-stem system for winter crops. Illustrated. Pages, 4.

VINE PRUNING. BY F. T. BIOLETTI, DECEMBER 1897. University of California Agricultural Experiment Station, Berkeley, Cal.—In this the advantages and disadvantages of the various systems of grape-vine pruning as practiced in California, are clearly and concisely set forth. The pamphlet of sixteen pages is freely illustrated.

REPORT OF ANALYSES OF COMMERCIAL FERTILIZERS FOR THE SPRING OF 1897. BY L. L. VAN SLYKE, NOVEMBER, 1897. New York Agricultural Experiment Station, Geneva, N. Y.—Seven hundred and thirty-five samples of commercial fertilizers, representing 500 different brands, were collected during the spring of 1897 and analyzed. Of these different brands, 400 were complete fertilizers; of the others, 32 contained phosphoric acid and potash without nitrogen; 33 contained nitrogen and phosphoric acid without potash; 1 contained nitrogen and potash without phosphoric acid; 31 contained phosphoric acid alone; and 3 contained potash salts only. Pages, 71.

OBSERVATIONS ON RECENT CASES OF MUSHROOM POISONING IN THE DISTRICT OF COLUMBIA. BY FREDERICK V. COVILLE, DECEMBER, 1897. Department of Agriculture, Washington, D. C.—The recent death of Count de Vecchj, in Washington, D. C., from eating poisonous mushrooms, has prompted the publication of this popular and well illustrated account of our common edible and poisonous fungi. It should be remembered, however, that no picture can convey an exact idea of the plants represented, and as Mr. Coville observes: "A novice who proposes to gather mushrooms for himself should never use a species for food until he has found out positively its name and its non-poisonous character. He should then familiarize himself with this species until he knows it from all others as certainly as he knows the cabbage, the turnip, the cauliflower, or any other of our common vegetables. He should confine himself rigidly to this his personal edible list, and should add to it only as thus recommended. His authority for the name and qualities of each kind he adds to this list should be some person having an unquestioned expert knowledge of mushrooms." Pages, 21.

CATALOGUES RECEIVED.

Wm. Toole, Baraboo, Wis., pansy and other seeds. Jos. H. Dickerman Seed Co., St. Louis, Mo., seeds, implements and fertilizers. Texas Seed and Floral Co., Dallas, Texas, seeds and plants. Green's Nursery Co., Rochester, N. Y., fruit and ornamental trees. Vilmorin-Andrieux & Co., Paris, France, tree and plant seeds. John Peed & Sons, London, Eng., seeds.

STARK COUNTY HORTICULTURAL SOCIETY.—At the December meeting of the above society C. A. Dougherty, representing the board of trade of Canton, presented a proposition from a responsible pickling firm, of Pittsburg, in which the firm proposes to establish a plant for salting pickles, the pickles after being

salted to be shipped to their main establishment at Pittsburg, to have the pickling process completed. The matter is in charge of a committee composed of Messrs. S. H. Rockhill, W. Wise and C. Hall.

COLUMBUS HORTICULTURAL SOCIETY.—The annual meeting of the Columbus Horticultural Society was held December 18, and officers were elected as follows: Wm. L. Lazenby, president; Mr. Sessions, vice-president; Geo. W. Sinks, treasurer; John F. Cunningham, secretary; D. S. Kellicott, O. W. Aldrich and J. J. Janney, executive committee.

Mr. Beattie made an interesting report on carnation rust, and spoke at some length on starting geraniums and wintering coleus. Prof. Lageman read a paper on "The Origin of the Christmas Tree," furnishing a pleasing account of the customs associated with that venerable institution. Mr. C. P. Fox discussed "Nut-bearing Trees and Their Products."



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PURPLE FRINGED CALLA Flowers 9 inches long, purple and white, curiously fringed, 75 cents each.

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Societies.

WHAT SOME ARE DOING.

MASSACHUSETTS HORTICULTURAL SOCIETY.—We have received the exhibition schedule of the Massachusetts Horticultural Society for 1898, offering prizes to the amount of \$8,100.

WESTERN NEW YORK HORTICULTURAL SOCIETY.—The forty-third annual meeting of the Western New York Horticultural Society will be held in Rochester, January 26th and 27th. There will be assembled in Rochester at the time of this anniversary several hundreds of the leading horticulturists of New York, including representatives from Cornell University and the New York Experiment Station. An invitation is given to all interested to attend these meetings.

HAMPDEN HORTICULTURAL SOCIETY.—The annual meeting was held at Springfield, Mass., December 15. The following were elected officers for the ensuing year: E. P. Chapin, president; R. H. Smith, C. W. Bryan and J. H. Hendrick, vice-presidents; H. C. Rowley, treasurer, and W. F. Gale, secretary. W. G. McIntire was added to the board of directors. The by-laws were changed so that hereafter the directors may use their discretion as to holding exhibitions. Heretofore it has been obligatory to hold two a year, and often at a financial loss.

GRAND RIVER VALLEY HORTICULTURAL SOCIETY.—The annual meeting was held last week and the following officers elected for the ensuing year: J. A. Pearce, president; Wm. Rowe, vice-president; E. C.

Phillips, treasurer; J. R. Munson, secretary; Charles W. Garfield, S. S. Bailey; Asa W. Slayton, W. N. Cook, Homer Hayes, Mrs. John Graham and Mrs. Sarah Smith, executive board. The executive board will meet January 25 to arrange places of meeting and the programme for the ensuing year. The fruit institute will be held in place of the February meeting.

SOUTHWESTERN IOWA HORTICULTURAL SOCIETY.—The annual meeting of this society was held Christmas week, closing December 23. The meeting was well attended and was most successful in every respect. For the first time in many years Mills county failed to secure the first prize for the best display, the award falling to Polk county, Mills county being forced to take second place. It was decided to hold next year's meeting in Council Bluffs. A large number of the members of the Nebraska Horticultural Society attended the sessions. The following officers were elected for the ensuing year: D. W. Lospeith, president; J. P. Jackson, vice-president; W. M. Bomberger, secretary; J. Needles, treasurer.

PENNSYLVANIA HORTICULTURAL SOCIETY.—The regular monthly meeting of the Pennsylvania Horticultural Society was held December 22 in Horticultural Hall, Philadelphia. The principal business was the election of officers for the year 1898, which resulted as follows: President, Clarence H. Clark; vice-presidents, Robert Craig, Charles H. Miller, Dr. George Goebel, Sidney W. Keith; treasurer, William F. Dreer; secretary, David Rust; professor of botany, Thomas Meehan; professor of horticultural chemistry, Dr. Persifor Frazer; professor of entomology,

Rev. H. C. McCook, D. D.; executive council, Edwin Lonsdale, John Burton, Thomas Cartledge, Henry F. Mitchell, Burnet Landreth, Dr. J. Cheston Morris, John Westcott.

H. G. Roebbling was awarded a medal for two rare orchids and a first-class certificate for three other specimens. The first premium for exhibit of six cyclamen plants was awarded to Robert Craig, with special mention for John Thatcher, who showed a collection of rare plants, cut flowers and primroses. The first premium for vegetables went to Richard C. Kaighn, Ellisburg, N. J.; second premium, John M. Kaighn, Ellisburg, both showing salads.

THE ILLINOIS HORTICULTURAL SOCIETY.—The annual convention of the Illinois Horticultural Society was held at Springfield, Ill., December 28, 29 and 30. There was a large attendance, and the display of apples was very fine. Valuable papers were read as follows: "Soil Management of Orchards," Prof. T. J. Burrill, University of Illinois; "The Status of Horticulture in Illinois," F. L. Williams; "Ornamental Tree Planting," Hon. John M. Pearson; "The Systematic Pruning of Orchards," R. Morrell; "Small Fruit Culture by the Farmer," L. N. Beal; and many others.

The following officers were elected for the ensuing year: President, H. M. Dunlap; vice-president, H. A. Aldrich; secretary, L. R. Bryant; treasurer, J. W. Stanton. Springfield was selected as the place for holding the next annual convention of the society, and a resolution was adopted appointing a committee to petition the Nebraska state committee to provide for a fruit display at the Omaha Exposition.

Hardy Shrubs

AND CLIMBERS.

Ghent Azaleas, Azalea Mollis, Hardy Roses, Ampelopsis Veitchii, Clematis Paniculata, Rare Conifers, Iris Kaempferi, Eulalia Japonica, with all hardy herbaceous plants and grasses suitable for fall planting. Catalogue on application. High-class Plants for the Conservatory, Greenhouse, Lawn and Grounds of country places a specialty. ❀❀❀❀❀❀

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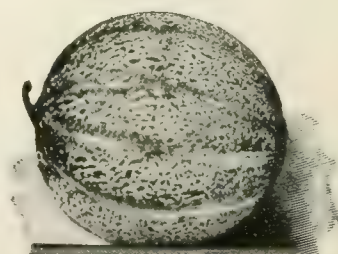
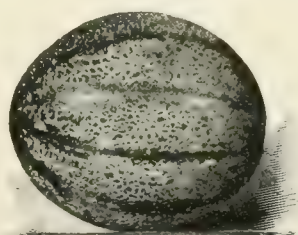
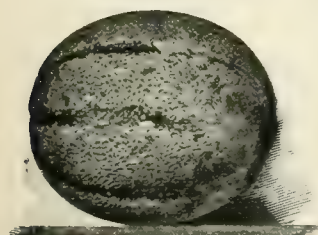
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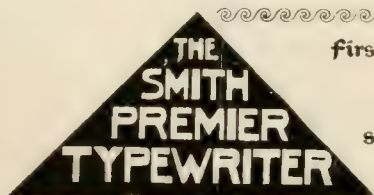
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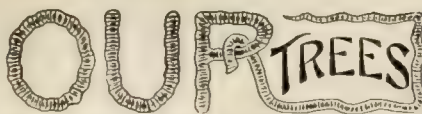
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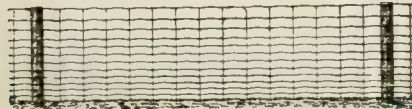
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cause they can produce a large stock quickly and inexpensively, but one Lilac, on its own roots, is in good strong plants on their own roots. Of late years there has been a multitude of new varieties of Lilacs grown, and some of them have very great beauty, but, unfortunately, almost all the stock offered, both in this country and Europe has been budded on Privet, and is practically worthless for Lilacs grown in this way are certain to die in a few years. Nurserymen bud Lilacs on Privet because their own roots is worth a score of budded plants. I have arranged with a leading English nurseryman to supply the varieties described, which are of the best.

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Lemoinei flore pleno, double rose-colored flowers; fine.

Marie Legraey, large panicles of white flowers.

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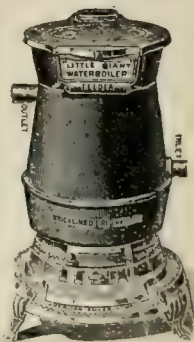
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A VIEW IN GRACELAND CEMETERY.

Cemetery.

PLANTING AT GRACELAND.

Those who have access to Graceland Cemetery, Chicago, receive object lessons in planting that are in every way desirable. They are artistic, for they fit the character and the spirit of the locality, yet they are simplicity itself in practice since the plantations are composed of hardy trees, shrubs and plants. Indeed much of the raw material of which they are made may be found growing wild over the swales and ridges characteristic of the lake shore north of the city. Witch hazel and cornuses, Virginia creeper and wild grape, asters and goldenrod are examples of what may be found inside as well as not far outside of Graceland.

The accompanying illustrations show some of the features seen at Graceland that are merely suggestions from Nature emphasized by man's intellectual selection, location and care. They show, too, in part at least, the use of native material applied in a natural way for the production of scenery that suggests a bit of wildwood that has been tamed and brought under the supervision and care of man. For instance, the native Virginia creeper climbs trees in its own untrammelled, graceful way, but it climbs the trees that its director wills it shall climb. Likewise, as in natural woodland one often finds trees muffled about the base by an ornamental growth of herbaceous plants, so here we see the bare trunks of tall transplanted elms not only draped with vines but emerging from tufted masses of goldenrod and asters.

These are but specimens of man's selection from nature's beautiful details. There are thousands more waiting to be appropriated by those who can give them a better opportunity for full development than unaided nature can. But in selecting details for such development they must be carefully chosen to fit their surroundings or they will look as much out of place as Cinderella's rags in the ball room or as a palm tree on an Illinois prairie.

FANNY COPLEY SEAVEY.

NATURAL MONUMENTS.

Nowhere is the growing taste for nature and natural objects so apparent as in the adornment of the modern cemetery. This has shown itself for a considerable period in the frequency of natural landscape effects, but it is not very long since old habits compelled us to think that a cold

and formal monument is the only fitting mark for the graves of our dead. Monuments whose materials are natural objects have appeared, and Graceland cemetery is not the least fortunate in them. One of its most striking monuments is a noble elm of great beauty and large size, moved for some distance at considerable trouble and expense, but the cost actually less and the beauty greater than many of the polished and chilling granite monuments in its vicinity, although beautiful indeed in themselves.

A natural monument of another character is a huge boulder of Waupaca granite overgrown with moss and lichens and surrounded with shrubbery. Overshadowing it is a thorn, enriching the picture with its character and giving it the strength and elegance which only a tree can. Most effective and that which completes the picture as a work of art is the position of the rock itself. Like the tree and adjacent shrubbery it seems a part of the place, to have grown out of the ground as its natural habitat, leaving the geological novice to half guess it a curious piece of glacial drift, and the wholly unsophisticated visitor to think it had been there always, an old inhabitant that had known no other home.

Recently still another natural monument has found a place in Graceland. Again it is a mass of Waupaca granite, but so luxuriantly overgrown with lichens, and lichens of such contrasting and wholly different species as to be most attractive for this feature alone. It reposes underneath a mass of overhanging lilacs which have prospered in their position long enough to give a sense of overshadowing, and to have outgrown the rock in the way we find shrubs do in nature. Like the other, it seems a part of the ground in which it is situated, and although the picture is artificial in its make-up, it yet remains the imitation of a natural effect. As we see it in the illustration the picture is still incomplete. The removal is very recent, and a little planting still remains to be done. Some portions of the rock must be veiled and covered and the picture separated from the low headstone which we see in the background. The

small boulders at left are of the same material as the rock and were placed in their positions at the same time with it. That, however, which makes a monument of this character most satisfactory is the manner in which the whole picture melts into the surrounding landscape, and while it is a breaking-away from old traditions, it is nevertheless, appropriateness itself. It combines a distinctive marking for the grave with a more artistic effect. It is quiet and unobtrusive, suggesting the repose most suitable to a place like this, besides being less expensive to procure, more economical to maintain, and easier to care for. Moreover, it suggests endurance and is enduring, a quality which peculiarly appeals to us in a place of burial.

P.

Trees and Shrubs.

PRUNING YOUNG TREES.

It is not saying too much that many young trees are ruined by severe pruning, and many more are much weakened by it. A gentleman who had set out an avenue of pin oaks a year ago recently inquired if it would be a good time to cut away some of the lower branches. The trees, he said, were about seven feet high, and it was his desire to have no branches lower than five feet.

Now I may say first that for a lawn tree no branches should be cut away. The prettiest specimens are those with branches sweeping the ground. But in the case of the one who was seeking advice, there were good reasons for desiring that the lower branches should not be retained. My answer was that unless the trees had more branches above five feet than I should suppose, it would be highly injudicious to cut away any of them until the trees were stronger, and I would repeat the advice to anyone seeking it in similar circumstances. A young tree well established and well branched will grow a great deal faster if its branches are not taken away. I am sure that had the party referred to tried an experiment,

cutting away all branches below five feet on the half of his trees and leaving the others untouched, he would have been abundantly satisfied of the correctness of my advice.

I have seen the mistake made many times. Those who raise trees in a commercial way are well aware of the danger of cutting away the lower branches of trees too soon. Trees intended for avenue planting, which often have to be with bare stems from six to seven feet high, are not trimmed up to the required height at once. They are let grow almost at will for a few years, branching wherever they will, and in this way form sturdy trunks in less time than if they were pruned up at once. A great deal the better way, as I told the party inquiring, is to cut away a few only every year, not commencing at all until the trees are five to six feet high, having oaks in mind. I was explaining this to a friend one time and he replied, "Well, but I see here some young oaks which you have transplanted trimmed up almost to a bare pole." I acknowledged this, and explained that in such cases it was a necessity to save the life of the trees. Roots had been lost in transplanting which had to be met by shortening the tops. I added that had the trees been moved with all their roots intact, such as would have been the case if they had come from out of pots, there would have been no pruning necessary.

Some years ago I witnessed the ruining of several rows of Carolina poplars by too close pruning. The trees were young and about eight feet high. The year previous they had grown at will and branches were in abundance nearly the whole length of the stem. These were all taken off save a few at the top. There was great disappointment at the end of the season at the very weak growth they had made. It took fully a year to have them of the height and branchiness they should have been the season previous.

I trust this experience will be useful to those who are contemplating pruning at this pruning season.

J.

PREPARING FOR GRAFTING.

To readers of GARDENING residing in the South it is not too early to suggest that preparations should be made for grafting. On almost all places there are trees which could be properly grafted, and even where there is no tree that seems to call for the exercise of the grafter's art, it might be practiced as an object lesson to many and an interesting operation to every one concerned. Because of the millions of fruit trees which are raised annually by grafting the operation is usually connected with the propagation of these trees, but it need not be, as there are very many ornamental trees on one's place which could be improved by grafting. It often occurs that fruit growers place cions of many varieties of pears on a single tree, in order to test the sorts or to say they are growing a certain number of sorts. Just the same thing can be done with ornamental trees.

I have in mind an example of this in the case of a fine tree of the double-flowered peach, which displayed branches of pink, crimson and white flowers on different parts of the tree. And I have seen sterile bushes of hollies grafted with seed bearing ones, changing the character of the tree, very much to its advantage. Many trees and shrubs on one's place of which there are other species will suggest themselves to those interested. As a rule the two which it is desired to unite must be of the same genera, though frequently,



A BOULDER MONUMENT.



A VIEW IN GRACELAND CEMETERY.

but not always, a relationship in the same natural order is sufficient, as, for instance, the pyrus and the crataegus, and the peach and the cherry, which in both cases have been united one on the other.

Those accustomed to raising seedling fruits from which they hope for something good, hasten the look for time when fruit will be produced by grafting the seedlings on a good sized tree already in bearing. In the case of an apple or a pear this is a saving of perhaps nearly ten years. Seedlings are slow to bear, while a cion inserted in a bearing tree would be apt to bear in three years, as when once united to the stock its behavior will be the same as a natural branch on the tree. It will be right to mention in this connection that any tree having various other sorts grafted on it will lose its lateral habit of growth, and in some cases this may be objectionable. As an illustration, the Howell pear is of rather a spreading growth, while the Buffum is as upright almost as a Lombardy poplar. If one of these were worked on the other the incongruity of growth can be imagined.

A word now as to the cutting of wood for cions. Choose vigorous shoots of the past year. Cut them in the winter while entirely dormant. Should the ground be open, bury the cions out of doors, covering them entirely with soil. If this cannot be done or if the other way be preferred, cover them up in boxes of soil and place them in a cool, moist cellar, there to remain until time to graft. The best time to graft is just as the buds are perceptibly swelling on the trees in the open

air. This denotes activity of the sap, an essential in the union of the cion and the stock. When the two—the cion and the stock—are of small size, say of $\frac{1}{2}$ -inch diameter or so, the old plan of cleft grafting—the splitting of the stock in the center—is the most expeditious, but in the case of the stock being of larger diameter, the uniting process does not occur in the center, when cions are near the side, and this is objectionable. Whip grafting, which is the placing of the cion on the side, is the better way in such cases, as the union is complete, and leaves no gaping scar as the other way so often does.

Philadelphia.

JOSEPH MEEHAN.

MOVING LARGE TREES.

There are probably as many ways of moving trees of large size from one place to another as there are varieties of position and men to move them. There is something so grand about a large tree that if it can be transported to a more suitable place than the one it occupies, those who are to enjoy it have gained a great deal. The work has been attempted at Graceland Cemetery with success, and although the subject has been pretty thoroughly written up, yet the question is so vital to the gardener and lover of trees that the statement of it in another way may do no harm.

In 1889, two trees sixty feet high, one two feet in diameter, the other two feet four inches, close to one another and growing together as one, were moved for the distance of half a mile to a place within the cemetery. The manner of

moving was as follows: A trench was dug around the tree at the distance of thirty feet on an average, and the roots uncovered from it toward the tree. A mass of earth was left around the tree to about fifteen feet from it, or rather would have been so on all sides had not the character of the soil brought about a one-sided development. The roots which had been uncovered were taken up, wound in canvas with damp straw or moss to keep them moist, and tied up to the branches, loosely enough not to break, but sufficiently to keep them out of the way. This was done very carefully in order to preserve every possible root in good condition and perfect vitality. The root-system was not more than five feet below the surface. The trunks were fastened together with ropes in order to keep them from spreading, and braced with planks spiked from one tree to the other so that they would not move with reference to each other.

When the roots had been cared for, a channel was dug directly underneath the trunks of the trees under the root-system and a timber put through. Then three other timbers were put beneath the roots at the sides, all parallel. Planks were put from one to another to hold up the roots whenever there was a tendency for them to fall. Then the removal took place as one would move a house. House-moving screws were put under, the timbers raised and blocked up until high enough to put under two bearing timbers supporting the four in use already. These again were raised until high enough to place beneath them rollers and planks



MOVING LARGE TREES.

for skidways. Then the capstan was set on ahead and the trees drawn forward exactly like a house. The spread of the roots and the weight of the earth was sufficient to hold the trees upright, although chains and guys were placed in position for greater security. Only a heavy wind or hurricane would have toppled them over.

The excavation which was to receive the trees had already been prepared, a foot being allowed for settling, and the tree was rolled into it. The roots were unpacked, trimmed as carefully as nursery stock, and planted and packed with earth with the greatest care. They were placed as nearly as possible in their former position, except that the slope was now from west to east instead of from east to west as it was before, thus turning the trees half way around. The top was not trimmed in the least as it could not be reached. Very important to the future success of the trees were the large quantities of good earth which were put into the excavation. At least one hundred yards were used. The trees were given special watering for two or three years, but none thereafter.

The success of the removal is to be measured by succeeding results. The change of position seemed to have had no effect upon the trees whatsoever. They were not checked in growth in the least, and have grown and leaved since then with all their former vigor, and bid fair to do so. The whole secret of success is in the care of the roots. They were cared for in such a way as to retain their vitality to the utmost, and placed so as to secure abundant food, in order to successfully feed so large a tree. The rest was only a problem in engineering.

Two years later a still larger tree was moved for the distance of fourteen miles, with the same success and with as good results. The height was seventy feet, the circumference of the trunk three feet above the ground was eight feet two inches and the weight of the whole including the ball of earth was forty tons. The only difference in the manner of removal was that an iron bar six inches wide and two inches thick was passed horizontally

through the tree at the height of eleven feet, against which were braced large timbers to keep the tree in an upright position.

There are many cases in which the removal of a large tree to a suitable location at once rather than wait for one to grow is not open to question. Many situations both in the way of beauty and comfort are incomplete without the strength and protection of such an object, and the character which it lends to a landscape from the dignity of its age cannot be found in any other way. Downing, in his essays, mentions the case of a person who has built a house upon a perfectly open and level piece of ground. Years must elapse before a young tree is of much value, and the only feasible way to supply what is needed if one can afford it is removal.

Downing also discusses what trees may be moved. In his day, Sir Henry Stuart of Scotland had written a book relating his own success in moving all kinds of trees, which attracted much attention. The plan was perfectly feasible in the moist climate of Scotland, but signally failed, Downing says, in the dry summers of America. Two kinds of trees, however, did succeed, and they of the most beautiful, the elm and the maple. Instead of growing a deep tap-root like the others, they possess large numbers of fibrous roots which give many months by which the trees may feed when placed in a new position. Downing also says that a tree grown in an isolated position is surer of success when transplanted than one protected by others. The vital question in the whole matter, however, is the root-system. The greater the opportunities for the tree to procure food, the greater the probability of success. A. P. WYMAN.

The Flower Garden.

RUDBECKIAS—AN EXPLANATION.

On page 107 you quote an English correspondent as saying in an English paper this plant is not very new to English gardens. It is evident that he cannot yet have seen the true *Rudbeckia Golden Glow*, as it is absolutely new to English gardens. The plant he goes on to speak of as *R. laevigata* and confounds with *R. Golden Glow* is a different plant entirely, having single flowers. Messrs. Barr & Sons first brought *R. laevigata* into prominence and specimens from their stock were used in the preparation of the plate in *The Garden*, but under the name of *R. nitida*. As the writer of the article that accompanied the plate, the name of the species being new to me, I went to some trouble to find out exactly what *R. nitida* was, but found opinions divided, so Messrs. Barr compromised the matter by sending the plant out under the popular name Autumn Glory. Of its merits I can speak highly and I recall a bed of it isolated on the grass in Kew Gardens that was a glorious picture for many weeks.



MOVING LARGE TREES.

I imported this rudbeckia last spring, and though it was insufficiently established to show its full worth, it nevertheless gave a goodly display of flowers and will doubtless show its true character this season. There is therefore no inconsistency in the matter, but Golden Glow and Autumn Glory are two distinct rudbeckias one having double and the other single flowers.

A. HERRINGTON.

New Jersey.

HERBACEOUS PLANT NOTES.

In addition to the plants named in the last issue as being suitable for moist situations, we have many others of equal importance for the same purpose.

Thalictrum aquilegifolium grows very tall under such conditions; but its panicles are here of an immense size and when planted among some stronger erect growing grasses or other stout plants, which afford them a slight support, the wind does not break them down or bend them over. Hibiscus, rose colored and white, are both very free bloomers and should always be planted in moist ground; here the hot August sun has no ill effect on the flowers as in a dry border. *Tradescantia Virginica* has not very prominent flowers, though they are pretty on close examination, but with its long arching foliage it is very attractive when used in the right place. *Hemerocallis* in all sorts, especially those with banded foliage, may also find a place among the other things. Nearly all of our polygonums delight in plenty of moisture, where their foliage is stiffer and of a richer color. The Japan irises do better here than in any other situation and give us a great variety of shades and color. *I. pseudo-acorus*, var. perfects broader sword-like leaves near the water and the common *I. Gladwyn* found wild in English meadows, has ornamental seeds which last on the stalks until fall. *Lythrum*s are well worth growing in such places and the chelones love to send the tips of their roots into the water; the flowers of the white form of *C. obliqua* and of *C. Lyoni* are especially conspicuous among them. *Astilbe rivularis* and *A. Thunbergii* have longer racemes of flowers in wet ground than in the ordinary soil of the garden. *Asclepias incarnata* is quite at home here and showy while the flowers last. The cimicifugas are grand with their long tapering spikes which they send up in masses when once well established. *Monarda didyma* furnishes bright color in the hot months and should be planted largely. Several of the saxifragas may also find a place here and *Eupatorium purpureum*, though an ordinary native plant will be found very attractive and desirable in many ways.

Many of the veronicas will succeed far better and bloom for a longer time where they have the benefit of constant moisture. The corydalis is a spring bloomer with pretty flowers and elegant foliage, the species affording various shades of yellow, and in *C. solida* we have purple flowers. *Pyrethrum uliginosum* will furnish a perfect mass of white daisy-like flowers towards fall. Boltonias and many of our native asters are also very suitable autumn bloomers, and helianthus in variety should not be left out. *Lysimachia clethroides* blooms freely in August and September, the white flowers being very effective; it forms an erect symmetrical bush about 3 feet high. *Achillea ptarmica plena* will be found to succeed admirably, and a few of the spring flowering anemones, like *A. rivularis*, white; *A. Apennina* blue; *A. sylvestris*, white, should find a place in partially shaded nooks formed by taller growing



CANNA MLLE. BERAT.

plants. The bold foliage of heracleums is magnificent when we can find a suitable sheltered position for them, as strong winds are apt to destroy their beauty. *H. emiens*, with glaucous leaves is harder in this respect, and not likely to be injured by either rain or wind. This plant is further recommendable because the foliage does not show any signs of decay until late in autumn, while other species are likely to drop the bottom leaves quite early. *Podophyllum Emodi* is far superior in many respects to our native *P. peltatum*; the fruit is brighter colored and the foliage more lasting. *Gillenia trifoliata* acts very much like the spiræas and does remarkably well where water is near. *Erigeron aurantiacus* often refuses to grow in ordinary garden soil, but here we generally see them in perfection, especially when partly shaded from the sun at mid-day.

J. B. KELLER.

CANNA MLLE. BERAT.

This is one of Crozy's introductions of 1896, and noteworthy because of the pleasing soft shade of rosy carmine which is characteristic of the flowers, approach-

ing pure pink more closely than any other variety. The plant is about four feet high, with bright green leaves of good proportions. The flowers are large, petals rounded, trusses of good size and very compact.

The Greenhouse.

NOTES.

The *Streptosolen Jamesoni* is one of the showiest plants we have in bloom in the greenhouse at the present time. It is a shrubby member of the solanum family, with drooping panicles of orange flowers and closely allied to the annual browallias. It may be quite easily raised from cuttings, and if given plenty of room, it will make a large bush in a single season. The plants are better to handle in pots, for when large they are with difficulty established in the autumn. Cuttings shifted along into 6-inch pots make fine single stemmed plants for winter decoration. These may afterwards be grown into standards. If this be the object they should be grown through another sum-



A JAPANESE GARDEN.

mer and winter without blooming in order to get well developed heads. Their natural habit is recumbent when weighted with bloom. In standards they take a gracefully drooping form, and their most effective arrangement is when placed as specimens among smaller plants. The panicles of orange-colored blossoms are borne at the ends of the stems. If these are cut away when about past, another crop will follow from four to five weeks later.

Browallia speciosa major, a handsome blue-flowered relative is also an acquisition of merit, of more recent introduction. Under cultivation it is little better than of annual duration, and probably such under natural conditions. With us it bloomed well into last spring, but when placed out for a summer's growth refused to grow. There is little to wonder at in this, for it blooms so profusely from every bit of growth that little vitality can remain. With a gardening friend I have been speculating on what a cross between these two plants would result in. I managed to get four seeds from the streptosolen which did not germinate; my friend obtained better results from the browallia, but the plants so far do not show the effect of the cross. Plants from seed sown in spring come in splendidly for an autumn display. It probably will not have any value commercially for cut flowers, as complaint comes that the flowers do not last; but the sprays keep well, and if one will take the trouble to dress them as cut flowers should be every day or so, they will be found a welcome color addition in vases of cut blooms. T. D. H.

NOTES ON PALMS.

This is the best time to pot palms, provided it is necessary to move them; but as it is an operation these plants do not take kindly, some judgment should be exercised before venturing upon it. If a palm has been doing well, I prefer to keep it in a moderately small pot, supplying needed nutrition in the form of fertilizer and frequent watering. There is a limit, however, to which this treatment can be carried, and when it appears that the pot is filled with little else than roots, a shift into a larger one becomes desirable. But care should be taken that the new pot is not too large, and do not pot so deep as to obscure all the upper roots. The exposure of a portion of the coarse roots at the base of the trunk is a condition natural to many of our most decorative palms; the hungry roots are at the bottom. The soil, in potting, should be packed very firmly about the ball of roots, and in subsequent watering apply sufficient to thoroughly saturate the entire mass of roots and earth in the pot. It is a common source of trouble with palms where they are potted loosely and given just so much water at stated intervals, that the water escapes through the loose earth between the sides of the pot and the ball of roots, and never penetrates the latter.

It is a common occurrence to find palms with a few ragged and withered outer leaves, and perhaps one or two comparatively healthy leaves in the center. A plant in this condition has been neglected at some time, and on turning it out of the pot it will be found that many of

the smaller roots are lifeless. In such a case it is best to wash away all the soil from the roots, removing carefully all portions of the latter that are of no value. The plant should then be placed in a pot something smaller than the one it occupied previously, filling in with soil so as to thoroughly and firmly close all the crevices between the roots. After potting, palms should be placed where it will not be necessary to move them for some time; water carefully, and spray or syringe them daily in bright weather. C. B. W.

WINTER-FLOWERING PLANTS.

With a little preparation and forethought the greenhouse may be kept bright with flowering plants throughout the winter months, and that accomplished without depending on forced stock to any great extent. For some time past chrysanthemums have naturally occupied the foremost place, but though admirable in their way, and without doubt the most showy and effective of autumn flowers, yet the esthetic sense requires a change after being satiated with chrysanthemum shows, and with this in view some provision must be made for the future. Among large flowered plants for winter the new cannas will take a prominent place, and some of those that have scarcely substance enough to endure the strong winds and sun of summer may prove quite satisfactory under glass. Among these may be classed a number of varieties of Italian origin, in the production of which *Canna flaccida* was used to some extent in hybridization, and doubt-

less helped in giving size to the flowers, but not substance or toughness to their petals. Of this strain Italia and Austria were among the first, and have now become widely distributed but some of the later varieties, among which are Allemanina and others, are even larger and finer, and outdoors have given flowers fully seven inches in diameter, and the inner petals being much more developed than those of former varieties, gives the flowers better form.

These varieties being strong growers, take up quite a lot of space and will also need strong soil for their full development, but for conservatory use they can be kept in pots or tubs of moderate size and fed with liquid manure when well established. A two-fold object is attained by the winter use of the improved cannas in the conservatory, namely, the adornment of the latter and the better preservation of the canna tubers, for some varieties are given to rotting of the tubers when stored away under the benches or in a cellar. A few pot carnations and Paris daisies are very useful for cutting from, and will seldom fail to furnish some flowers, but to insure a succession of flowers it is well to keep a little reserve stock of such plants to be brought in from time to time as needed. *Swainsona galegifolia alba* is also very useful for this purpose, but gives the best results when planted out, for example, at the cool end of a rose house, or in any light house with a temperature of 50 to 55 degrees. Various begonias are included in the reliable winter stock of every well-furnished establishment, those of the *incarnata* type being among the most satisfactory, while

B. rubra and the forms of *B. nitida* are scarcely ever without flowers.

Eucharis Amazonica will produce a good winter crop of flowers if prepared by a certain amount of rest, this being accomplished by giving a lower temperature and less water for a period of six weeks or more, but such treatment should be stopped before loss of foliage occurs, else more harm than good may be done. *Statice Halfordii* is also quite a decorative species for the conservatory, bearing large branching spikes of flowers, the light blue calyx being much more enduring than the small white corolla. This statice is increased by means of cuttings, or by seeds when obtainable, and grows well in rich loam in a temperature of 55 to 60 degrees. In a warm house the various forms of *Anthurium Andreanum* are very seldom out of flower, and the plants are at all times interesting, but these being quite rampant growers under favorable conditions sometimes occupy too much space for a small house, and in such case *Anthurium Scherzerianum* would perhaps give more satisfaction, the showy spathes of the latter species lasting fully as well as those of *A. Andreanum*. *Clivia miniata* is not by any means confined to summer for its flowering season, and helps much in brightening the dull days of winter with its showy orange and yellow flowers, and with the cyclamens and Chinese primroses that should now be coming in we can have a succession of pleasing forms and bright colors, without including the many winter-flowering orchids that may be used with more or less success in the ordinary conservatory.

W. H. TAPLIN.

NOTES ON THE JAPANESE CHESTNUTS.

The Japanese chestnuts, as a group, present some striking features which make them a valuable acquisition to chestnut culture, and which give them a promising future for the work of nut breeders. The writer has been able to compare the group on a large commercial scale with the Europeans and Americans. In 1897 the Japanese group showed the following prominent features: Earliness in ripening and large size, which at present are the controlling factors in profitable nut culture; freedom from hair on the nut, which vendors prefer; freedom from leaf-blight, which turned the Europeans and Americans yellow in September in large orchard blocks in New Jersey, and reduced their crop fully 50 per cent; perfect unions with American stocks on stump land; and great prepotency in the group, as shown in the similarity of a large number of seedlings to the parent variety.

The greatest objection to the Japanese is their poor quality, but in this there is also wide variation. The Extra Early Japan, opening about September 3d, is nearly as good as Paragon, and Early Reliance has not the usual astringency of the Japanese. There is no reason to believe that varieties of Japanese chestnuts cannot be made as good as the Europeans by judicious plant breeding. Among the most valuable varieties are the Alpha, Extra Early Japan, Early Prolific, Killen, Early Reliance, Parry's Giant, Kerr and Colonel Martin.

There are many more varieties, and doubtless the new interest in the culture of nuts of all kinds will bring all their good qualities to light. G. H. POWELL.



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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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DOUBLE-FLOWERED GLADIOLI have made their appearance in France, and they are said to be attractive.

THE MASSACHUSETTS HORTICULTURAL SOCIETY has secured about \$300,000 under the will of the late Francis B. Hayes of Lexington, Mass.

KANSAS CITY DOES NOT TOLERATE short-measure fruit packages. They have an inspector there who looks to that and his name is Wuerz.

THE NEW YORK BOTANIC GARDEN has made a good start in its serious work by breaking ground for the museum building, which is to be one of its prominent features.

A NEW FORESTRY ASSOCIATION is being organized in Massachusetts on a permanent basis, having for its object the preservation and extension of the forests of the state, wherever the land is not otherwise in demand.

GOOD FRUIT CONTINUES in brisk demand as we judge from the fact that an orchard of ten thousand trees has recently been started near Macon City, Mo. At Clarence in the same state \$4,000 worth of fruit trees were delivered a few weeks ago.

PARKS AND THEIR IMPROVEMENT appear to be the order of the day. City Engineer Lillie of Youngstown, Ohio, has taken the work in hand and promises to make Wick Park of that city just as good as the best of them. Mr. Lillie has our best wishes for his success in the undertaking.

UTAH'S FRUIT OF LAST YEAR is described as being poor, trashy and worm-eaten, shunned at home and dumped into the trash pile when shipped. What's the matter with Utah? Perhaps Oregon and Washington are demonstrating their climatic superiority over the Salt Lake country, but some claim that the spraying laws are not enforced.

THE FLORISTS OF WASHINGTON, D. C., are up in arms against the free distribution of the flowers raised in the government greenhouses at public expense, and Secretary Alger of the War Department has replied that the flowers shall not be permitted to waste their sweetness. It is bad to waste anything, but why may we ask, should trouble and expense be lavished in the production of that which is not needed?

THE GOVERNMENT WILL DISTRIBUTE 13,000,000 PACKETS of seeds to aid congressmen in securing votes for re-election this year, and spend \$70,000 to do it. This vast weight will be carried through the mails free and the private citizen will continue to pay an exorbitant price for postage on his little parcel of seeds or plants which he has bought and honestly paid for, in order that his more favored neighbor may get his free seeds without paying any postage.

THE PEOPLE OF COLORADO expect their official horticulturists to do good work, and the latter expect to get paid for it. This is as it should be, but as it is, unfortunately, the people of Colorado, or their representatives, have not come up to expectations, and as a result the horticulturists are still expecting the salaries due them for their labors of the past three years. And yet they say Colorado is a healthy and a fruitful state.

A GREAT LOSS HAS COME to horticultural journalism in the suspension of *Garden and Forest*, which ceased to exist last month with the close of the tenth volume. For ten years this weekly publication waged ceaseless war on all that is objectionable in forestry and landscape gardening, incidentally contributing much toward the elucidation of less important horticultural problems. It is pleasant to believe that much good work has been accomplished through its brief existence, and perhaps a better future insured to our forest wealth and public grounds; but it is difficult to comprehend how the people of a great nation could be so blind to their own best interests as to let one of their most valuable servants perish of non-support.

POTTING SOIL WILL SOON BE NEEDED in quantity where greenhouse and summer bedding plants are grown to any considerable extent. Perhaps through press of other duties it was impossible to store away the needed material in fall, and now it must be provided at any cost. The partially exhausted soil from chrysanthemum and other benches will, with the addition of a little fertilizer, suffice for the bedding stock, but a better grade of material is required for the general assortment of permanent pot plants. Come from where it may, the soil should now be dry or drying under cover, and thoroughly mixed with such other ingredients as are necessary to the formation of a desirable compost. The pots should be clean, especially on the inside, and it is well to have a good supply of clean drainage material close at hand.

THE SPORTING OF CHRYSANTHEMUMS, says Dr. Masters, is in a general way easy enough to understand. The Chinese and

Japanese have cultivated the plants for 2000 or 3000 years, during which time they have been crossed and recrossed, intentionally and unintentionally many times. This has shaken the stability of the plant so to speak, and a very slight shaking of the color cells, as in the shaking of a kaleidoscope, would suffice to produce a new arrangement. The theory of the dissociation of colors accounts fairly satisfactorily for the phenomenon.

SUNDAY LABOR AMONG GARDENERS is not so much of a monopoly in the United States as a correspondent of the *Journal of Horticulture* would lead the uninformed to infer. It is true that our gardeners are often required to perform regular Sunday work, but not, so far as we are aware, to any greater extent than is common in market gardens, nurseries and private places in and about the great English metropolis itself. We would prefer to have it arranged so that all gardeners could have every Sunday free of routine cares, but by nature the duties of the profession are and will ever remain such as to call for constant watchfulness, all argument to the contrary notwithstanding.

THE HELLEBORES OR CHRISTMAS ROSES are occasionally heard of as being successfully cultivated in various gardens of the eastern states, but in the face of cold winters it is hardly possible to do much with them north of Philadelphia. The flowers usually open just as winter comes upon us, and they are so short of stem that even in open weather their beauty is marred by the mud after splashing rains. If one can devote a frame to them they are more satisfactory; but plants in frames afford little pleasure when there is frost in the air and snow on the ground. It is better to grow the plants in pots plunged in a frame, removing them to a cool house when the flowers appear. Whether on the plants or in a cut state, the blooms retain their form and purity of color a long time, and the plants flower with remarkable freedom under generous treatment as to soil and care. It should be understood that these particulars refer strictly to *Helleborus niger* and its varieties, for our experiences with some other species and varieties in pots have not been so satisfactory as could be desired.

SCHOOL GARDENING.

For several years the instruction of youths in the art of cultivating fruits, flowers and vegetables in gardens associated with the elementary schools has formed an important part of the scheme of technical education in horticulture in Surrey which has given such excellent results. From the first the gardens have been popular with the lads, and it is gratifying to learn that their popularity is steadily increasing, and that their utility as a means of instruction has been proved to demonstration. The technical education committee for the county have recently issued an appendix to their report dealing with the school gardens, and from this we have made a few extracts that are likely to prove of interest to our readers.

The oldest art of all, and the foundation of all others, is that of horticulture, and technical education in it has therefore become a necessity of the times in various countries. In some of these countries the meaning of "Technical Education in Horticulture" is much better understood and appreciated by the great mass of the people than in our own. Perhaps no more striking evidence of the importance that is

attached by Continental authorities to the subject of educating youths in the principles and practice of land cultivation can be adduced than the action of the French Government. We are told there are 28,000 schools in France with gardens attached to them. The theory of horticulture is taught in these schools, and practiced in the gardens. This is done to some extent in England, and especially perhaps in Surrey, but what emphasizes the importance of such teaching as entertained by our neighbors across the Channel is the decision of the French Minister of Agriculture to greatly increase the number of school gardens; and it is moreover now made imperative that masters of elementary schools in rural districts of France must be capable of giving practical instruction in the cultivation of the soil. This has been the case in Switzerland for many years, and an intelligent Swiss gardener, practicing with much success in England, ascribes the prevailing thrift and contentment of his working compatriots mainly to the rational system of teaching indicated. In Surrey there are schoolmasters who, chiefly through the facilities which have been afforded them by the County Council, have made themselves competent to teach both the principles and practice of horticulture in its essentially useful aspects, and are in fact doing so both in continuation schools and gardens.

A fact may now be stated which is not perhaps generally known—namely, that if France is in advance of England in teaching gardening to small children, Surrey is in advance of France in teaching it to strong youths. If these youths had shared in the advantages of horticultural lessons in elementary schools and plots, they would have been less strange to, because better prepared for, the sterner and more substantial work in the continuation gardens. This is clear from the work of the school boys who (under the Education Department) are taught by the side of older youths, as at Hale, East Farnham, Banstead, Caterham, Burgh Heath, or wherever two sets of gardens are provided. It is, however, all the same true that 200 Surrey youths, without any such preparation, have acquitted themselves most creditably. The work of not a few is surprisingly good, while of some it must rank as of the highest excellence—far better than that which the fathers of most of them show in their gardens or allotments.

When the character and methods of teaching practical gardening to youths whose school term has expired, as well as to adults in Surrey, was explained to Mons. Henri de Vilmorin, he was delighted, observing that there was no such teaching to those classes of the community in France, as he was sure there ought to be. Good as the teaching may be in, and in connection with day schools, it ceases too soon, or just at the time when the youths gain strength enough for effective work, and whose minds are sufficiently developed to comprehend the teaching imparted, and to appreciate its present and prospective usefulness. Thus they do not do everything "Better in France" than is done in England, and there is no reason why the soil of this country should not be made quite as productive as that of any other nation in Europe.

It has been stated in a previous report that the value of the produce grown on a number of the one-rod continuation school plots of Surrey, worked entirely by youths under instructions, exceeded an average of ten shillings. This statement took

some persons by surprise, but it was all the same absolutely correct; and one of the youths working in Reigate center realized fifteen shillings from his plot last year, including prizes for good work and from produce sold—the sales representing only a portion of the produce grown. This is not intended to suggest or imply that all the land in the county, or the kingdom, should be put under this form of cultivation, or anything so chimerical; but it is intended to show that vast quantities of land already under spade culture, as in the gardens of the operative classes and allotments, might be made to yield twice the amount of food by thorough cultivation; and moreover this remark, with the truth it embodies, is applicable to land generally.

It is not necessary to go beyond the plots themselves for examples which prove beyond all possible doubt the signal power of cultivation in increasing the productiveness of the land. In some groups of gardens all the plots are excellent, and in many creditable; but in others there are striking disparities—full crops, half crops, quarter crops, and crops not worthy of the name, or, to refer to them by valuation, plots ranging in value from ten shillings actually down to two-pence. Yet the land in each group is exactly the same, the manure and seeds provided for all are identical, and all the plots in each center obviously subjected to the same weather influences. Two things, and two alone, account for the difference: namely, sound diligent work, with knowledge on the one hand; negligent or slipshod work on the other.

There has been a greater advance in the character of the work during the present year than has ever been previously recorded. In several gardens it has exceeded anticipations, and, so far as is known, is unparalleled. This is largely due to a spirit of emulation that has been incited, and to the commendable pride which many workers take in their plots. They have striven assiduously, and are entitled to a full measure of praise; but at the same time it must be admitted that the weather has, on the whole, been decidedly more favorable to the progress of crops than that of previous years, or, in other words, the same advance could not have been made had the drought been as serious and prolonged as in 1895 and 1896; still, let the weather be what it may, the best and most diligent workers achieve the best results, and this, to a large extent, irrespective of the nature of the soil. This, indeed, is the most important fact that has been established by this systematically-conducted, carefully-instructed and registered work.

A similar opportunity has never before been afforded as in these three hundred and sixty-nine small gardens in Surrey for proving to demonstration that the greatest of all factors in obtaining a maximum amount of useful produce from the soil is sound, intelligent, persevering work, or doing what requires to be done in the right manner and at the proper time. Many of the youthful workers have done all that could be reasonably expected, as have their teachers, and only under the influence of a very favorable season indeed can the best of the present year's work be excelled.—*Gardeners' Magazine*.

MASSACHUSETTS HORTICULTURAL SOCIETY.—At the exhibition of this society on January 8, Mr. J. E. Rothwell was awarded a silver medal for a plant of the rare *Odontoglossum Vuylsteckeanum*.



H. M. DUNLAP.

WORKERS IN HORTICULTURE. I.

Herewith we present to our readers the portrait of President-elect Dunlap of the Illinois State Horticultural Society. Mr. Dunlap has been engaged in practical horticulture all his life. Born in Leyden township, Cook county, Illinois, November 14, 1853, his father, M. L. Dunlap, ("Rural" of the *Tribune* until his death in 1875), moved to a farm in Champaign county in 1856, and it is on this farm that Mr. Dunlap still lives. Graduating from the University of Illinois, he has since lived upon the farm, and succeeded A. C. Hammond as secretary of the State Horticultural Society in 1893. Elected to the state senate in 1892 and re-elected in 1896, he has given close attention to the interests of Illinois horticulturists, and was properly rewarded by election to the presidency of the state society at its annual convention, held in Springfield, Ill., last month. Mr. Dunlap is much interested in all departments of horticulture and believes that Illinois will soon take its proper place as the first apple-producing state in the union.

Fruits and Vegetables.

MARKET MUSHROOMS.

For those who purchase their mushrooms, says Professor Colville, instead of gathering them for themselves, the judgment of the colored market women that a particular species is edible I consider as sale a guide as the decision of the highest botanical authority, not because their knowledge of mushrooms is extensive but because they are thoroughly familiar with the two or three edible species they handle and know them as certainly from poisonous kinds as they know persimmons from crab apples or opossums from rabbits. The colored women shun all other kinds of fungi, whether the poisonous or not, with a half superstitious dread. This statement is made because the impression has been created that the poisonous mushrooms connected with the recent fatal case were on public sale in the street market. They were not on sale, but were brought in from Virginia by a countryman who was delivering them, somewhat



FORCING STRAWBERRIES

under protest, upon the order of the gentleman whose death they afterwards caused. The gentleman had requested samples of a fungus that the countryman described as growing near his farm and, after examining the samples, had pronounced them edible and ordered a basketful.

FORCING STRAWBERRIES.

The forcing of strawberries in greenhouses has not yet become of any great commercial importance in this country, and I doubt if it will ever attain the position it holds in the list of indoor crops in England. The bountiful supply of our summer season far surpasses that of any other country, the prices bringing them within the reach of all; and we seem to satisfy our desire for this fruit until the next season rolls around. Then again other things fill the market, especially in large cities, where tropical fruits of many kinds can be had throughout the winter months. Still, I am confident that the gardener who has a location near large markets can successfully force strawberries through part of the winter.

If it were possible to grow them for Christmas as well as they can be had in February or March, I think an expert should ripen three crops at remunerative prices, and two crops can surely be grown in a house devoted to mid-season chrysanthemums. I have never successfully forced plants lifted from beds late in the season and planted on benches, but it is said to be practiced with good results. My plan is to plunge 3-inch pots in a bed of virgin plants, hastening the rooting of runners by the use of rich, light soil in the pots, and shifting from

these as soon as possible to 4 or 6-inch pots, fruiting always in the latter. The need of an intermediate shift is a question, both methods being satisfactory, and when help is expensive the large shift will perhaps be the best. These pots are so plunged in coal ashes, in the open, that a cold-frame can be set over them as freezing weather approaches.

The plants are grown on with all possible vigor until late in October when by gradually withholding water the crowns are well ripened. A slight freeze will be of benefit to them in several ways, the destruction of insects being one of the most important, especially the red spider, which I have found quite numerous on plants in the stage of ripening. On being benched all old and diseased leaves should be removed, and the plants treated to a spray of some form of fungicide, preferably the ammoniacal solution, as this leaves no stain on the foliage. Starting them at thirty-five or forty degrees, the temperature may be raised each week until at the time of blooming the plants are growing in sixty degrees. It is now almost imperative that the days should be clear, for no amount of fire heat will cause the pollen to become active and fertile. The house should be held dry and the operation of pollenizing hurried on as fast as possible to allow all the fruits to be ripened off at or about the same time.

The operation of pollenization is simple, and if the right conditions prevail does not demand a large amount of labor. The pollen may simply be brushed over the cluster of open flowers with a soft camel's-hair brush, or, in cases where a part of the crop is composed of pistillate varieties, a spoon or shallow ladle can be

held under the flowers as they are pollinated, catching the pollen grains for further use as they drop from the brush. From the time the fruit sets until it begins to color frequent applications of liquid manure should be given, increasing the heat to sixty and seventy degrees as the berries swell.

As to the method of holding the fruits from the sides of the pots, nothing has been found so satisfactory as small squares of wire netting. These not only hold the long-stemmed fruits from the pot, but keep those on short stems from the water which is given the plant. A well grown plant with from eight to ten good sized, well colored fruits is no mean plant for table decoration, and a fancy market at Easter time will take a large number of these at far better prices than the fruits could be sold for if picked. Ten large well shaped fruits are enough to grow on plants in 6-inch pots which at the prices usually quoted in February or March will prove a paying crop if sold by the quart or by the plant.

Ithaca, N. Y.

C. E. HUNN.

GREENHOUSE TOMATOES.

The cultivation of tomatoes under glass is yearly on the increase in America. In some commercial places they are almost exclusively grown, and where a few years ago they were to be seen in but a limited number of private gardens, there is now hardly one which cannot lay claim to at least a dozen plants in pots or boxes. With the increased culture, prices, of course, have had a downward tendency. I remember to have seen tomatoes fetch as high as \$1.50 per pound at wholesale in Boston six years ago. These

fancy figures are a thing of the past, though the price is still run up as high as 75 cents per pound occasionally. As outdoor tomatoes can be had in this country from July to October, the cultivation of this vegetable under glass is quite unnecessary in summer unless specially fine fruits are desired. But I know of one or two farmers who regularly have large houses in full bearing when outdoor fruit is procurable in abundance. Fruit raised under cover is seldom so much cracked, decayed or blemished as that grown in the open, and it always colors much better, fetching a higher price.

For some years past I have made a special study of tomato forcing, testing all the best American and English sorts sent out. I have no house set apart for their culture. Where glass structures are numerous, it is well to devote a section to them, but this is not particularly requisite. The plants here are grown in a rose house temperature, fruiting them in 10-inch and 12-inch pots. By making successive sowings it has been found possible to pick sufficient tomatoes to supply an ordinary family every week in the year, and this for several years past. A minimum night temperature of 55° is maintained in winter, with a rise of ten or fifteen degrees during the day. In a special house can be given them, however, a night temperature ranging from 60° to 65° degrees will show the best results.

The first sowing of seeds is made about the middle of July, the plants being picked off and potted as condition demands, and grown outdoors until the beginning of September. Some growers train their plants to a single stem, but I prefer three, running up a lateral from each side of the main shoot. The leaves are not so large on the three-stem plants, and comparing these with the plants grown to a single stem, I find it possible to obtain nearly double the quantity of fruit. All side growths, except those selected for fruiting, are pinched out as soon as they appear, and during the months of December, January and the early part of February all the flowers are artificially pollinated, choosing the middle of bright days for the operation and employing for the purpose a camel's-hair brush. Later in the season the plants are given an occasional shake to scatter the pollen, but this matter does not require any attention after the middle of April. The growing points are usually pinched out of the main stems when they have formed five or six clusters of fruit, the side branches carrying from three to five clusters each. The leaves, when they become long and numerous, are trimmed so as to allow light and sunshine free play upon the fruits, removing the old ones as they decay. Tomatoes prefer a dry atmosphere, and should not be syringed at any time. It is a mistake to attempt their culture in the same house with cucumbers, as is sometimes done. Occasionally a little mildew will appear upon the plants, but this is easily held in check by painting the heated pipes with the usual mixture of sulphur and lime; and the aphides, troublesome in late spring and early summer, may be likewise banished by tobacco fumigation. I prefer pots or boxes for the culture of winter tomatoes, for in these the plants are easier to control, handy to move when it is necessary to do so and the fruit sets much better than on plants in beds or benches. Good results, however, can be had from bench plants set out after the middle of January, which will bloom when the days are comparatively long and bright. The plants grown after

April may be stood in carnation or other cool houses, where they then fruit very well, prolonging the supply until the outdoor crop is ready. The first sowing of seeds gives ripe fruit by November 1 and additional sowings are made about the first of October and the first of December. The fruits of the October sowing will commence to ripen from the middle to the end of February, when the first crop is almost spent. A pinch of seed is also sown about February 15, some of the plants being grown inside, the others potted in 6-inch or 8-inch pots and placed outdoors as soon as the weather permits. By July 1, the latter afford ripe fruit, which was already set when the plants were moved.

Tomatoes are high feeders and like a rich compost, doing well in a mixture of turfy loam and thoroughly dried cow manure (or pulverized sheep manure) in equal parts. A space of about two inches is always left at the top of the pot for light surface dressings of sheep manure or other fertilizer, which are given once a fortnight after the pots are filled with roots. Liquid manure is also applied about thrice a week, and once in ten days the plants are gone over and disbudded and tied.

Considerable difference of opinion exists as to the best forcing varieties. Many have it that Lorillard is without an equal. For the second sowing this is certainly a good sort, but for early winter fruiting, it sets very moderately and is far inferior to several others tested here. Nicholson's Hybrid, raised by a tomato specialist in this state, which averages from six to eight fruits to the pound, of bright color and fine shape, is hard to beat. For successive sowings I have found Frogmore selected, an English sort, very fine, but Eclipse, which has been grown here three years, is in my opinion the best of all. This variety is a good setter producing as many as fifteen fruits to the bunch occasionally, and last season the yield ran from sixty to seventy-five fruits per plant, grown in pots. Comet is a good dwarf variety, and this, like Eclipse, is of Scottish origin. May's Favorite is a splendid sort for second sowing, fruit large and firm. Among other good kinds are Livingstone's Beauty, Perfection and Stone, but none of these latter can be recommended for sowing earlier than October, for they are not sufficiently free-setting in mid-winter to be profitable. I have found English forcing varieties as a rule superior to those of American origin. The tomato in England is grown under glass almost exclusively, and therefore great efforts are made to produce varieties specially adapted to these conditions. It is worthy of note, though, that these varieties give better results here than across the water, thanks to our clearer air and brighter skies.

[We have found the American variety Ignatum very fine for forcing purposes. —Ed.] W. N. CRAIG.
Massachusetts.

Publications.

BOOKS AND BULLETINS.

BULLETIN ON. 36 OF THE IOWA AGRICULTURAL COLLEGE EXPERIMENT STATION.—Iowa Experiment Station, Ames, Iowa, 1897.—Soil moisture is treated herein statistically by Messrs. J. B. Weems and J. J. Edgerton. "Some Botanical Notes on Corn," by Messrs. L. H.

Pammel and R. Combs, are interesting and well illustrated; "Seed Testing" is handled by Mr. C. E. Ball; Mr. R. Combs contributes some particulars of the "Alfalfa Leaf-Spot Disease;" and Prof. J. L. Budd writes with his usual force about hybrid roses, gooseberries and strawberries.

THIRD ANNUAL REPORT OF THE MONTANA AGRICULTURAL EXPERIMENT STATION.—Montana Experiment Station, Bozeman, Mont., 1897.—The report of the horticulturist in this bulletin is valuable for its statistics of tree fruits, and it also includes a serviceable paper on strawberry culture, with instructive notes on varieties.

SWEET PEA REVIEW.—By the Sunset Seed and Plant Co.—Wm. Doney, San Francisco, Cal., 1898.—The third edition of this entertaining and useful booklet comes to us in a brand new dress and in greatly enlarged form. It is certainly attractive in appearance, and its contents are just of that concise and exact character which appeals to those who do not care to lavish time and study on prolix sentimentality. The lists and descriptive notes are alike valuable, the illustrations gems of the photographer's and engraver's arts. The pamphlet, in short, is no more or less than its title implies—a review of the sweet pea up to date—and all growers of this flower will find it helpful in making selections for specific purposes.

BOG AND WATER PLANTS.—By Wilh. Monkemeyer, Curator of the Leipzig University Botanic Garden.—Gustav Schmidt, Berlin, 1797.—We have in this publication an excellent account of the history, culture and uses of all the plants considered available for the decoration of the bog and water gardens. The plants are grouped under their natural orders, and thoroughly indexed. The text, of course, is in German, and each one of the 190 pages bears the stamp of careful and conscientious work, such indeed as only a skillful writer and competent gardener could turn out. The numerous illustrations are admirable in every respect. Such a book is certainly worthy of a substantial cloth or leather cover in place of the stiff paper binding which holds its parts together.

CATALOGUES RECEIVED.

Iowa Seed Co., Des Moines, Iowa, seeds, bulbs, plants and tools. California Nursery Co., Niles, Cal., fruit and ornamental trees and shrubs. Cole's Seed Store, Pella, Iowa, farm and garden seeds. The Geo. H. Mellen Co., Springfield, Ohio, plants, trees and shrubs. Southern California Acclimatizing Association, Santa Barbara, Cal., general catalogue and garden guide, also handbook of foreign plants. James Veitch & Sons, London, England, flower and vegetable seeds.

PLEASE
MENTION
GARDENING
WHEN
WRITING
TO
ADVERTISERS.

Societies.

WHAT SOME ARE DOING.

MUSKEGON COUNTY HORTICULTURAL SOCIETY.—The following are the newly elected officers: President, S. A. Aldrich; vice-president, R. M. Pett; secretary, F. W. Schettler; treasurer, F. Bluhm; members of the executive committee, C. E. Whitney and Orman Baxter.

IOWA HORTICULTURAL SOCIETY.—A largely attended and interesting meeting of this society was held recently at Sigourney, at which the following officers were elected for the coming year: President, C. F. Gardner; vice-president, M. J. Wragg, Wauke; secretary, Geo. Van Houton, Lenox; treasurer, W. M. Boneberger, Harlan.

BANGOR HORTICULTURAL SOCIETY.—The annual meeting was held at the Board of Trade rooms on Monday, January 3, Mr. A. L. Simpson presiding. The treasurer's report showed the society to be in a sound financial condition. The election of officers for the ensuing year resulted as follows: President, A. L. Simpson; vice-president, F. H. Duffy; secretary-treasurer, E. M. Blanding; executive committee, Fred C. Low, F. H. Duffy, J. S. Rowe, together with the president and secretary. This is the senior society of the kind in the county.

WASHTENAW AGRICULTURAL AND HORTICULTURAL SOCIETY.—Hereafter this society will be called the Washtenaw Fair Society. The following officers were recently elected: J. F. Avery, president; B. D. Kelly, vice-president; F. E. Mills, secretary; F. H. Belser, treasurer. The following are the board of managers: P. Toumy, W. Aprill, G. Aprill, W. E. Boyden, Isaac Savery, A. J. Sawyer, E. E. Leland, B. D. Geer, F. Chapin, J. H. Andrews, J. Heppler, E. J. Hebbler, M. Seabolt, W. E. Stocking, S. W. Millard, O. M. Martin, H. Richards, F. B. Braun, W. F. Bird, H. P. Glover, A. C. Schumacher, H. Ball and H. S. Dean.

GREENE COUNTY HORTICULTURAL SOCIETY.—The crowd in attendance at the meeting held on New Year's day was among the largest in the history of the society, and after partaking of a sumptuous dinner the meeting was called to order by President-elect Howell, after which the reports of the standing committees were read. Many of the members expressed the opinion that the society should use its influence in having the streets and public highways planted with shade trees. The following are the standing committees for 1898. Orchards—W. A. Irvine, H. H. Park, G. T. Tippin; small fruit—W. T. Zink, G. W. Hopkins, E. H. Tullis; vineyards—M. O. Cole, W. C. Everingham, Rev. John Brereton; vegetables—R. G. Hotham, S. B. Mortimer, W. H. Ritter; flowers—Miss E. Lindsay, Mrs. Winton, Mrs. A. W. Howell; ornamentals—Dr. Hensley, Dr. Boude, G. A. Atwood; entomology—Miss Emma Park, Mrs. Mortimer, Dr. Hensley.

TEXAS STATE FLORAL SOCIETY.—This society is at present in a remarkably flourishing condition, both financially and in point of membership. Next month the advanced premium list will be published for the show to be held this year, and will be sent to all members. All flower growers of Texas may become members on application. The new officers are as follows: President, J. W. Barnett; first vice-president, Mrs. S. W. Cohen; second vice-president, Mrs. C. Harrison;

recording secretary, Mrs. Louis Crow; financial secretary, Mrs. H. H. Godber.

OTTAWA COUNTY HORTICULTURAL SOCIETY.—The following are the officers elected for the year 1898: President, R. M. Harrison; secretary, J. W. Gamble; treasurer, W. Bredbeck; executive committee, T. W. Payne, W. H. Owen and W. Miller.

SPRING PALACE ASSOCIATION.—Matters relative to holding a flower carnival next spring were discussed at a meeting held December 30, 1897. The following constitute the board: Mrs. W. A. Adams, Mrs. B. Saunders, Mrs. Virginia Ford, Mrs. B. B. Paddock, Mrs. Drew Pruitt, Mrs. C. C. French, and Messrs. W. G. Turner, N. M. Washer, M. C. Hurley, H. C. Holloway, E. H. Loure, J. A. T. Evans and C. W. Hoelze.

KANSAS HORTICULTURAL SOCIETY.—At the thirty-first annual meeting of this society held at Topeka last week, the following interesting papers were read: "Small Fruit"—J. F. Cecil, Topeka; "Vineyards"—A. Oberndorf, Centralia; "Vegetable Gardening"—F. Tompkins, North Topeka; "Economic Points in Fruit Growing"—E. E. Fayville, professor of horticulture in the state agricultural college. Walter Wellhouse was heard on insecticides and fungicides, in which he spoke of the importance of spraying for codling moth, curculio and canker worm.

JASPER COUNTY HORTICULTURAL SOCIETY.—A special committee has been appointed to look up prices on berry box wood, to report at a meeting to be held January 15. At that time an order for one or two car loads of box wood will be placed by the society in preparation for the next season's berry crop. The members showed a progressive spirit by voting to help send a pupil to the Missouri State University at Columbia, by paying part of his expenses. In return for the assistance so rendered the pupil will be expected to report to the society that its members may get the benefit of his learning there.

When you write an advertiser please state that you saw the adv. in GARDENING.

DECORAH HORTICULTURAL SOCIETY.—This society was organized December 18 with the following as charter members: Ed. Blakeman, R. F. Tyler, Rev. John Ridley, H. A. Bigelow, John Elwick, Dr. E. Cartwright, E. H. Rygg, Chas. Broghamer, O. A. Berg, Frank Hanson and O. O. Lomen. The following board of officers was chosen: Ed. Blakeman, president; R. F. Tyler, secretary; Rev. J. Ridley, H. A. Bigelow and John Elwick, executive committee. The next meeting is called for the first Saturday in February.

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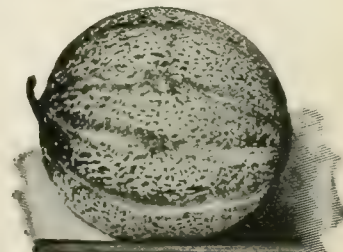
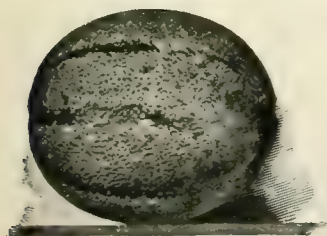
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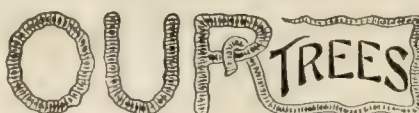
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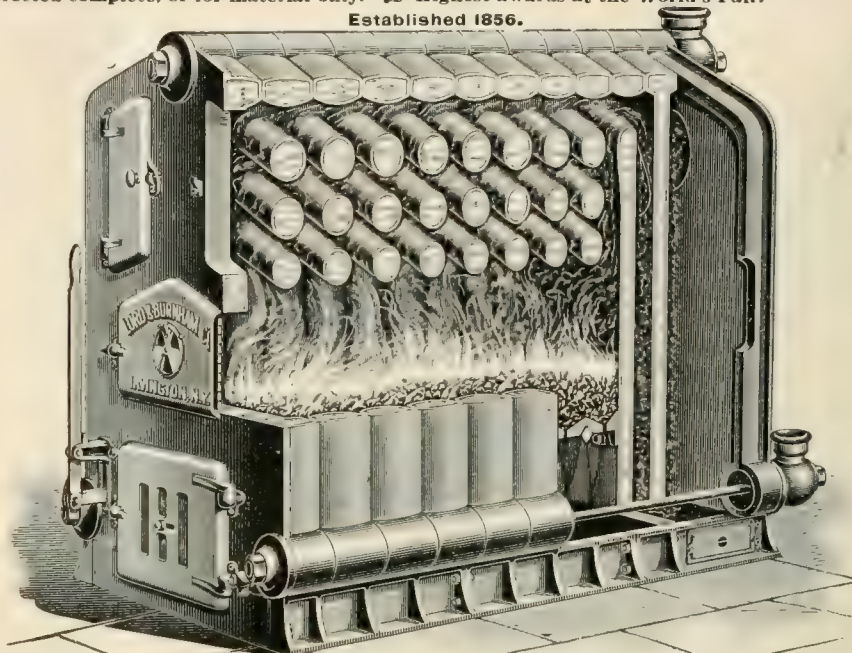
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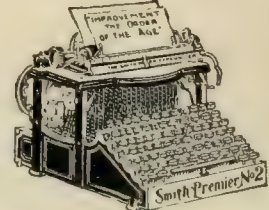
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GARDENING

Vol. VI.

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24 NUMBERS.

CHICAGO, FEBRUARY 1, 1898.

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No. 130.



AN ORNAMENTAL WELL-HOUSE, GARFIELD PARK, CHICAGO.

Trees and Shrubs.

THE BUR OAK.

One of the most attractive trees at this season is the bur oak, *Quercus macrocarpa*. It possess all the gnarled and crooked weirdness of the oak family and at the same time has that hurly-burly roughness from the broken and corky character of its bark that indicates its rigorous nature. This latter shows itself early in the corky wings of its younger branches. As commonly seen, its trunk stands erect, while its branches assume a general horizontal position, although they often take other directions. In summer its large, irregular and deepiy

lobed green leaves are rendered more attractive by the light color of their under surfaces. Its peculiar form and rapid growth in good soil make it a great favorite for an oak. It is not easily transplanted because of its large roots, but once established is easily taken care of, showing unusual ability to adapt itself to the various climatic conditions of our country.

A. P. WYMAN.

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Many parks otherwise as near perfection as the hand of man can make them, appear a trifle monotonous in the apparently endless array of trees, shrubs and flowers. In the escape from a crowded thoroughfare, the quiet shades of the foliage are at first very pleasing to the

senses, but in wandering around large places for any great length of time, the scene loses a portion of its attractiveness. Some of the best landscape gardeners have tried to remedy this by the introduction of such ornaments as that shown in the illustration on this page, and the idea has proven to be a good one. This, of course, applies to extensive private grounds as well as public parks and gardens. The buildings may be used for various purposes. Among such structures we find aviaries, observation towers, summer-houses, etc., and in this instance we have the building turned to practical account in the form of a well-house. These buildings may be clothed with vines in small city or suburban places; but where there is plenty of surrounding greenery extending over a large area, it is



PLAN FOR A SUBURBAN LOT

a mistake to hide them in this way. The architecture, whatever the style, should be good and distinct in each case, and it will be found that good architecture is always ornamental with appropriate environment.

A SUBURBAN LOT.

The accompanying plan made for Mr. J. E. Porter, of Sewickley, shows an unconventional treatment of a corner lot that few people would have the courage to carry out. Yet it has many attractions and advantages for the owners and their friends. The objection is likely to be urged that the public can not see the garden from the street, but neither is the interior of the house to be seen from the highway, and privacy in the garden is as certainly desirable as it is in the library or dining room, and all the public the owner is interested in will be invited to enjoy his garden as well as the hospitality of his house. The plea that it is selfish to exclude the public from one's grounds is not reasonable. I never knew of anybody being kept out of a garden that cared enough about it to ask to see it, and the charm and beauty of a garden is greatly enhanced by shutting out of view the dirt and ugliness of the street.

EXPLANATION OF PLAN.

1. Masses of shrubs, evergreen and deciduous, small trees with a few groups of bold herbaceous plants. 2. Crab apple. 3. Hardy perennials. 4. *Magnolia conspicua*. 5. Japanese maples. 6. Rhododendrons with *Lilium auratum* planted among them. 7. Japanese snowball. 8. *Paulownia imperialis*, to be cut to the ground every spring. 9. Pin oak. 10. *Pyrus toringo*. 11. *Rhododendron Everestianum*. 12. *Lonicera Bella Rosea*.

13. Group of *Aralia Japonica*. 14. Old spreading Seckle pear. 15. Tulip tree. 16. Tulip tree. 17. White birch. 18. Low spreading old apple tree. 19. White birch. 20. Scarlet oak. 21, 22, 23, 24. Cedar or locust saplings to be covered with vines, for clothesline posts. 25. Arched entrance to be covered with *Rosa Wichuraiana*. 26. Border of hybrid perpetual roses. 27. Scarlet maple. 28. California privet hedge. 29. Pin oaks planted forty feet apart between curb and sidewalk.

In addition to planting shown on plan the following vines are to be planted to shade porch, Hall's honeysuckles, Crimson Rambler roses, Chinese wisterias and *Clematis paniculata*. *Ampelopsis Roylei* is to be planted to cover brick walls of house.

J. WILKINSON ELLIOTT.

EVERGREENS IN WINTER ATTIRE.

At this season of the year, January, the color of many evergreens is so different from what it is in summer and in many cases so beautiful, that I am sure some notes regarding the subject will be of interest to many. In this vicinity we rarely get early snows, hence it is quite customary to plant certain evergreens especially for their color in early winter, and I could name several owners of nice grounds who plant beds of the various kinds, chiefly for the pleasure the various colors of the evergreens afford.

In this connection we owe a good deal to the retinosporas from Japan, as we do as well for their usefulness at all times. I think it is generally understood that all the varieties of this evergreen belong to one or the other of two species, *pisifera* and *obtusa*. I will, therefore, allude to them by their garden names. *R. plumosa aurea* is well known. It is a bushy

grower, the latest growth always a good yellow. About the commencement of November there is a deepening of color. *R. pisifera aurea* has a freer and much prettier growth. The yellow tips are of a deep, pleasing tint at the present time. There is a pretty dwarf-growing variety of it, called *R. pisifera aurea nana*, the color of which is even deeper than that of its parent. One called *R. Sieboldii* is noticed more than any other. It is now a deep bluish purple, which color it holds till spring. It is universally planted for the purpose spoken of, and is very useful up to a size of about three feet, after which, in these parts, it does not thrive well, seeming to lose its lower foliage. *R. squarrosa* is the well known steel, or grey colored one, pretty at all seasons of the year. The dwarf one known as *R. obtusa nana aurea* is pretty now, the golden color being more pronounced than it is in summer. *R. ericoides* takes on a reddish grey color, while *R. leptoclada* is darker, more like iron. *R. filifera*, sometimes called the weeping retinospora, is well known. There is a golden form of it, which is very pretty. *R. plumosa argentea* is of a silvery color. There are little white shoots appearing here and there among the foliage, giving it the appearance, to some extent, of having been in a light snowstorm.

Among biotas the common golden arbor-vitæ, *B. aurea*, changes to a pleasing light bronze color. But the gem among them is Rollinson's golden, *B. elegantissima*. This assumes a deep flame color, beautiful, and differing in color from all others. It is one to be well recommended. The Thujas, arbor-vitæ, furnish several. The dwarf one, *T. occidentalis ericoides*, is of an iron red color, and *T. Meehami* has golden tinted tops. The best by a

long lead is *T. George Peabody*. It is a lovely sight just now. Golden bronze is as near a correct description of the color as I can give it. A sprig or two shown to anyone conveys no idea of its beauty, a bush has to be seen to realize it. *T. Victoria* is the silver tipped one sometimes seen in collections. While pretty, more silver is needed to better its appearance. There is a beautiful variety with golden tinted foliage of the common white cedar of New Jersey, *Chamaecyparis sphaeroidea*. This has tiny golden shoots springing out from among the green. This and the natural airy growth of this evergreen render it very desirable. Not much in cultivation yet is a golden foliaged form of the ordinary red cedar, *Juniperus Virginiana*; Douglas' golden juniper is a beauty. The color at this season is of a golden bronze; much the same as that of the George Peabody arbor-vitæ. This is usually listed in catalogues as a variety of *J. communis*, but its growth is spreading, nearly identical with that of *J. prostrata*. *J. communis* is of erect, compact growth. But no matter about this, it's a grand thing. When planting for color effect do not forget the Deodar cedar, *Cedrus Deodara*. It is good all the season through. Talk of Colorado blue spruce! It is nowhere alongside of this! True, the Colorado blue spruce will stand in colder climes than the deodar will. And now let me call attention to some green evergreens. Of all the valuable ones of this class Lawson's cypress, *Cupressus Lawsoniana*, and its variety, *stricta viridis*, stand unrivalled. Let the winter be what it will, cold, cloudy or sunny, the foliage is always of the brightest green, beautiful to the sight. And so, too, is the *Thuja gigantea*, companion to Lawson's cypress, from the Pacific coast. Among broad-leaved evergreens there are several sorts of box, some variegated and others golden-leaved, and the same can be said of the *Euonymus Japonicus*. I am afraid I must omit *Aucuba Japonica*, as, though we get along with it here, it needs a sheltered position.

Before closing these notes, I would like to add that to have the prettiest colors on the evergreens named at this season, they must be planted in the full sun. In fact, such kinds as the various biotas will change hardly at all in the shade. It is the southern side, always, which is the prettiest. And this is true of all the evergreens.

JOSEPH MEEHAN.

Philadelphia.

The Flower Garden.

THE ALLEGHENY HOLLYHOCK.

The hollyhock Allegheny has been under observation on the grounds of the Vermont Experiment Station the past year. The flower was found to be very large, considerably exceeding in size any variety with which it was compared, and attaining to a diameter of six inches. The shape of the flower is peculiar. The staminodia (inner floral leaves) are of the same length as the outer whorl, the true petals. They are not closely laid together nor do they present the regularity of arrangement that is seen in most double flowers, as roses and chrysanthemums. The looseness of arrangement of the floral parts produces an unusual effect. The impression of lightness is much enhanced if the outer edges of the floral leaves are of a very light pinkish tint and the shade of color gradually deepens to pink at the base of the part. The colors

range through all gradations from pale pink to dark red. At this station the Allegheny bloomed profusely till cut down by frost, and to the last was loaded with buds. The hollyhock rust was not generally serious, though a few plants were much affected.

V. A. CLARK.

Burlington, Vt.

HERBAGEOUS PLANT NOTES.

A combination of shrubs and herbaceous plants, when the intermixing is done in a judicious manner, is capable of producing grand effects, provided we select the right thing for the right place. An ordinary shrubbery is composed principally of early spring and summer flowering material; there is a wealth of bloom in the earlier part of the season, perhaps often more than our taste would require, because however partial we may feel toward the flowers, we can not deny the fact that our eyes feel relieved when they rest on the fresh young green of a group of shrubs whose flowering period has not yet arrived. Later in the year green is abundant but flowers are by no means very plentiful among the shrubs, and it is at this season that our hardy perennials should fill out the deficiency in color.

But I do not mean to say that only late summer and fall flowering plants should be introduced into the shrubbery. The spring blooming plants, especially those of brighter color, should find a place among or in front of the shrubs as well as

time. There are of course other ways and means of relieving the monotony of long stretches of green. The variously shaped leaves, their diverse shades and tints, the difference of habit and growth, the berried shrubs and the often gay colored autumn foliage. All this has been repeatedly and ably brought to notice in the articles of Mr. Meehan and others; and therefore it is not imperative that we should always and everywhere intermingle the perennials with shrubs. In many instances they may even be considered as detrimental to the outlines of the picture before us, if used indiscriminately or to excess, yet they are generally in place near roadways or paths and in other prominent points where no provision has been made for special attractions at the different seasons in the year.

Low and creeping plants are almost indispensable near the edges or in the front part where the foliage of the shrubs may not come down so low as we may desire for a neat finishing off near the ground. In nooks and recesses taller material can be employed to advantage, and the tallest will be effective in the spaces between or in some vacant places in the back of the shrubbery. Crowding must be avoided. We should always be able to view the principal outlines of the plant or of a group of plants, except in a very few cases where the straggling or spreading growth would not support itself and needs the assistance of the neighboring branches to maintain an erect position in wind and weather. Often the background of such a shrubbery is formed of trees, some of which may have attained considerable height so that they overhang and give partial shade to the shrubs planted beneath. Not all our perennials would succeed under these conditions, yet the list of those which can safely be relied on for partial shade is certainly too long to be given here complete, and I shall only mention a few of the best known and most suitable species and varieties.

The scillas, alliums, trilliums, *Anemone Apennina*, *A. nemorosa* and the hepaticas are out very early in spring; they should be planted near the edge, also the different violets, *Silene acaulis*, dodecatheons, *Cory lalis solida*, *C. Hallerii*, *C. cava* and a few others of this genus, *Asperula odorata*, *Mertensia Virginica*, primulas and various vincas should be placed in the same position. Somewhat taller in growth are *Astilbe rivularis*, *A. Thunbergii*, a few of the astragalus, the hypericums, several ranunculuses, *Orobis vernus*, *O. lathyroides*, *O. niger* and others, *Cypripedium spectabile*, *C. pubescens*, *Dicentra eximea* and *D. formosa*, many of the dianthus, *Lychnis dioica* scutellarias, *Anemone sylvestris*, *Centaurea dealbata* and several of the veronicas. Still taller are the actæas, most of the spiræas, *Lythrum Salicaria*, *Saponaria officinalis* and *S. Caucasica fl. pl.*, trollius in sorts, *Amsonia salicifolia*, the aconitums, some of the geraniums and erodiums, epimediums, a host of our aquilegias and also the various pæonias. Where an assortment of still taller growth is wanted, I would suggest the cimicifugas and cephalarias, and some of the sunflowers, *Thalictrum aquilegitolum*, delphiniums, *Helenium autumnale*, digitalis, the epilobiums, and in a protected position *Heracleum giganteum* or *H. emineus* may find a convenient place.

In more sunny quarters the selection presents no difficulty. Here we may plant any species which we know to succeed in the ordinary open border, but we must not neglect the feeding of the plants afterwards, because the roots of the shrubs usually take complete possession



THE ALLEGHENY HOLLYHOCK

the later ones; but our aim should be to associate the early perennials with later flowering shrubs, while summer and fall blooming subjects may be introduced where their presence would insure an even distribution of flowers at a later period, so that no portion of any extent in the shrubbery may be without some attractive object for any considerable length of

of the ground and there will be but a small chance for other plants to succeed if we fail to provide ample nourishment. We must therefore not only see that a liberal amount of manure is annually worked into the soil, but we also must supply nourishment in a liquid form during the growing and flowering season, otherwise we could not reasonably expect a normal development of either the plants or their flowers. These applications should be especially liberal in late summer and in fall, assisting thereby our tardy bloomers to perfect an abundant crop of flowers, for that is the time we really need the enlivening color among the green foliage of the early flowering shrubs.

J. B. KELLER.

WHEN TO SOW PANSIES.

The vexations that attach to the raising of pansies in the autumn are so many, and the results correspondingly so meagre, that it has induced many gardeners to sow for their main crop some time in January or early February. Poor strains are not worth growing and are in fact a costly article to have around, but good ones are easily obtained from reliable sources, and these if sown now in flats of fine soil, and placed in a temperature of 55° at night, will give excellent plants, the best possible to set out at decoration time, when those carried over from the autumn sown seed will have about done flowering. I never could tell just why it is that there is always such a poor germination of pansy seed in fall as compared with the same seed sown under glass in winter, and when one goes to the trouble and cost of fine strains like the Bugnot or Cassier it is decidedly best not to sow in fall.

As soon as the young seedlings are up and large enough to handle they must be pricked off into flats at once, and by the end of March they will be both large and strong enough to set out in a gentle hot bed, where they will come quickly and soon begin to flower. There is also an advantage in having the use of the cold frames for the storage of the many things that need such protection. We used to have many sashes filled with pansies that are now used for other plants, this year it is pot strawberries that are brought in at suitable intervals in batches to force for early fruit.

E. O. ORPET.

RIGINUS COMMUNIS.

The various kinds of castor oil plant are valuable in gardening for tropical effect, and many are used every year. The plants, however, attain their full beauty rather late in the season, and the first severe frost puts an end to their existence. Thus their season of utility as decorative plants is under ordinary circumstances a comparatively short one. If a few are started in February in four-inch pots, they will make good sized plants by the middle of May and can then be planted out and the season of their beauty lengthened and their size increased very materially. Many catalogues name these plants as annuals. As usually grown they are practically annuals, while in reality they are not—forming trees in some parts of the tropics. Without any difficulty I have wintered some on various occasions, and their growth the following season was very fine, so vigorous and healthy indeed as to give the plants or trees the appearance of being good for many years. Unfortunately they become so large during the second year's growth as to render safe housing impossible with the accommoda-

tions of any ordinary garden, and then the deadly frost at last secures them for its own.

J. H. MAYER.

Pennsylvania.

SEEDLING SWEET PEAS.

I see by an exchange that Mr. Lynch, of Menlo Park, California, has just sown seventy-five acres to sweet peas for seed. During a visit to Mr. Lynch last summer he was just gathering the crop from fifty acres. He has had made a threshing machine through which the dry stalks are put. He showed me one seedling of Ovid which he valued at \$1,500. This plant had at that time three pods, but as he irrigated it he would get many more. The plant was three inches high and one foot in diameter, the flowers being of the same shade of red as in its parent. He also had several seedlings of similar character from Lady Nina Balfour, the blooms of which were all mauve or a light blue, thus making the national colors. Red, the new seedling; white Cupid; blue, the new seedlings. I have no doubt they will be used extensively for carpet bedding and borders. Cupid is used a great deal this way now. Mr. Lynch showed me 20,000 chrysanthemums in one block, and over four acres of violets. Eastern people have no idea how many of the latter are used on the coast. A few years ago I had occasion to pass by the Sunset Nursery quite often and could smell the violets over one-half mile distant. Over \$3,000 worth were wholesaled from this nursery in February, 1888.

THOS. H. DOUGLAS.

THE RESERVE GARDEN.

The reserve garden is a place devoted to the cultivation of plants for filling vacancies in the garden proper, and to provide a supply of cut flowers, thus preserving to the beds and borders arranged for effect their proper dignity and wealth of bloom. A place of this kind is almost indispensable in a garden of any pretensions, more especially if hardy plants are grown in quantity. Here one will find just the plant to close the ugly gap that inevitably stands out conspicuous in the perennial border now and then, and here may one with ample basket cut and come again.

Complicated patterns or plans should be avoided in making a reserve garden. This is not a garden for dress parade; this is a place to work in, a place to multiply stock and to grow it. Beds or borders from five to six feet wide are the most convenient in such places, with narrow walks between. The beds should have an edging of some kind, and a three-inch board nailed to posts driven in the ground serves the purpose very well in the absence of better material. Dwarf or trailing plants, such as violas, veronicas, *Phlox subulata*, moneywort, etc., may be grown so as to cover this rather unsightly framework, if a good appearance is desirable, but this is not at all essential to the utility of the scheme.

As for the other plants grown here, the individuals of each kind should be formally and orderly arranged or grouped together. By following out this system one may readily put his hand on a given plant or flower, and is not compelled to search all over the reserve ground for something which he knows to be there but cannot remember its exact location. It is also wise to label all the plants in the reserve garden. Labels that will serve their purpose are objectionable in the more decorative portion of the grounds, and those that will not last are

worse than useless—they are a nuisance. But good solid labels can be used in the reserve garden without fear or trembling, and that is the place for them. Some keep a record of reserve plants by making a plan of the ground, the name of the plant on the plan representing its position in the garden. This is useful where the plantation is permanent, but very unhandy and unreliable where one is continually moving and changing the plants.

The plants in the reserve garden should not be permitted to establish themselves thoroughly in their position. This would curtail their usefulness somewhat, for such plants could not be moved when needed without more or less retarding their growth. This refers particularly to perennials, the clumps of which should be divided with such regularity as will render it safe to move the plants at any time. In dividing the clumps of the permanent plantations, as is often necessary, the divided stock will be all the better for a year in the reserve garden, for the roots are generally so far mutilated in the operation that the plants require fully a year in which to recover. Given the reserve plants are now in proper condition to take the place of those removed, as they should be, there will be no serious break in the display where the plants are employed for effect. But in general the perennial border cannot be overhauled without serious loss in this respect where there is no reserve garden to aid in the work.

Many perennials are raised from seeds, and such seedlings should always be held a year in reserve, for while a large proportion of them may bloom the first season, many will not produce a single flower until the year following. These seedlings should be given plenty of room, so as to develop healthy and stocky plants before they are required for their final quarters. And still give them plenty of room even if there is no immediate prospect of their being needed elsewhere, for to those who like these plants, they are just as interesting and beautiful in the reserve ground as they can be in the flower garden, though perhaps less effective.

Here also should be found a corner for annuals, so many of which are useful for cutting, including sweet peas, mignonette, nasturtiums, stocks, asters and the other good things of this character too numerous to mention. A large number of these plants can be used with good results to take the place of such early flowering bedding plants as daisies, forget-me-nots, silene, etc. I used quite a number of annuals in this way last season, and although many of them were in bloom at the time, they stood the operation very satisfactorily where care was taken to move them with good sized balls of earth attached to the roots.

This is a convenient place to propagate hardy trees and shrubs, and plants from the nursery may be temporarily disposed of in a vacant plot. In all these uses for a reserve garden, I have not by any means exhausted the list; but sufficient have been named to show that the reserve garden has much to recommend it, and many others will suggest themselves to the progressive gardener.

DAVID FRASER.

ALTON HORTICULTURAL SOCIETY.—At the annual meeting held Saturday, January 15, the following officers were elected: President, William Jackson; vice-presidents, J. M. Pearson and E. A. Riehl; treasurer, F. Hoffmeister; secretary, Miss Helen Riehl; librarian, H. G. McPike.

The Greenhouse.

THE BLUE MARGUERITE.

The common marguerite with its white, daisy-like flowers and silvery leaves, is familiar everywhere. A closely related plant has yellow blooms and is useful in much the same way as the white one, although not near so common or so popular. But the blue marguerite, otherwise known as *Agathæa cœlestis*, is very seldom cultivated in this country, and yet it is a very beautiful plant and useful in producing flowers during the winter months. The accompanying illustration shows the plant at its best as a winter bloomer. The leaves are deep green in color, the flowers of a lovely sky-blue tint with yellow disk—the former a rare and precious color in our greenhouses.

A. cœlestis is easily grown. Cuttings of the half-ripened wood root freely in heat during the spring months, and their subsequent treatment may be pretty much the same as that given chrysanthemums grown in the open and potted in autumn. The plant, however, requires a trifle more heat than chrysanthemums during the late autumn and winter months. It is sometimes rather difficult to procure suitable material for cuttings on account of the free-flowering character of the plant, but this difficulty is easily removed by cutting back a few specimens to a moderate extent in January or February, thus causing a new growth from which cuttings may be selected in abundance later on. The blue marguerite has been used as a bedding plant in England with very favorable results, and it would be difficult to imagine a floral scene of greater attractiveness indoors or out than one composed of blue and white marguerites, judiciously blended with a view to obtain the most from the variety of color afforded by the flowers and foliage of both plants.

ORCHID NOTES.

The calanthes have now been in bloom several weeks, and are likely to remain attractive through an additional period of similar duration. *C. Veitchii* is grown here principally, and we have the plants in 5-inch and 6-inch pots. There are from one to three spikes to a plant, each spike bearing from twenty to twenty-five flowers of a rich rose color. The spikes vary in length from thirty inches to three feet. After the flowering season the bulbs are put away for a brief rest, where they can be kept dry, in a temperature ranging from 55° to 60°, keeping them in the pots they have been grown in. About the first week of March the bulbs are shaken out of the soil, placed in shallow pans of moist sand and removed to a shelf close to the glass in a house where the temperature rises to 65° and 70°, or in that neighborhood. Soon after the young roots begin to form, the bulbs are potted in a mixture of fibrous loam and dried cow manure, one part of the latter to two parts loam. Care should be taken to provide good drainage, and potting completed the plants may be returned to their former position near the glass. Some judgment is needed in watering until the plants are well established, when weak liquid manure can be applied two or three times a week. With this treatment followed closely, shading lightly and syringing daily in bright weather, good plants should result.

Several plants of the beautiful *Cœlygyne cristata* are coming into bloom. These are suspended from the roof of a rather

cool house in perforated pans. The potting compost consists of fern roots and sphagnum, top-dressed with live sphagnum. The long lance-shaped leaves are deep green, contrasting well with pure white flowers, blotched with yellow, which proceed from the base of the bulbs in large drooping clusters. In order to get a good crop of flowers from these plants, we have found cool culture indispensable, even to the extent of placing them outdoors in summer. A slightly raised bench beneath tall trees, sufficiently dense of foliage to exclude all fierce sunshine, is an ideal place for them. But the plants must be so disposed as to receive a maximum amount of light, drawing the line only against direct sunlight. Ample drainage is strictly essential to their welfare, for they require water in abundance,

SOME CONSERVATORY BLUNDERS.

It is quite common to hear the expression, "I wish I could afford a conservatory," and with all due respect to the many good men and women who make this statement I reply that in a majority of cases such language only betrays ignorance of the subject. One, of course, who has not a room fit to live in cannot accomplish much, but any person in possession of a house that will bear the addition of a bay window can as easily, and for the same expense, have a conservatory. On the other hand a large majority of those who conclude that they can afford one waste a few hundreds of dollars in arranging a box of a room in which nothing will live but green-fly, mealy-bug and the red spider. I have never yet seen a conservatory made by an



THE BLUE MARGUERITE.

overhead and at the roots, during the season of growth. The plants should be moved back to the cool house again early in September, and kept at a night temperature of 50° or 55° until the flowers show in January, when, if necessary, the development of the blooms may be hastened somewhat by a rise of 5° or so in the temperature.

Cypripedium insigne still holds its position as a general favorite with all classes of orchid growers. It is truly a "general utility" cypripede, valuable alike as a decorative plant and for cut flower purposes. We have some fine plants in large pans, but specimens of medium size, say in 7-inch pots, are by far the most serviceable. The latter are easy to move about, and they produce more flowers in a given space than those of larger dimensions.

ROBERT SHORE.

architect that was worth the price of the glass used in its construction. This gentleman generally gets a lot of fancy woodwork on the outside to obstruct the light; he forgets to arrange for ample ventilation; he has the interior finished in highly polished walnut or cherry, with a tile floor thrown in; and above all, to keep it warm, the heat is supplied from a hot air register.

No one can afford such a place for the cultivation of plants. I have succeeded in teaching a few how to keep plants alive in these contrivances, but it was not worth the trouble. Imagine a house like this full of palms and ferns, where the temperature in winter should not rise much above 70° in a moisture-laden air. Syringe and all is well for thirty minutes; then the sun comes out and runs the temperature up to 90°. Ventilate in the best

way possible; heat and moisture are sucked out together, the tile floor shortly becomes dry as an Arizona summer, and where the sun strikes its polished surface the rays are reflected to the under side of the foliage, reducing the sources of moisture to the flagrantly inadequate capacity of the pots. The plants suffer, and the house is closed. A cold air flue is now arranged, and proves a relief only when the wind is favorable. Cold nights and the register fails to supply sufficient heat—but the list of shortcomings is interminable, and they come high.

If it is arranged to have the conservatory contain as many cubic feet of air space as possible in proportion to the amount of surface exposed to the sun, a right start will be made. Have the outside walls and roof constructed so much of glass and so little of wood or iron as is consistent with security. Run steam or hot water pipes around the outside walls near the ground, heating by direct radiation. Don't lay a floor or path of any kind of masonry, one of earth or gravel is better and cheaper. If the dwelling is two or more feet above the ground, and it is desired to have the path of the conservatory on a level with the floor of the house, build one of plank on posts or brick piers, leaving the remaining space open to old mother earth, the best automatic regulator of heat and moisture, and the least expensive; it absorbs heat and moisture when some can be spared and gives them back when they are needed by the plants—don't shut out the earth.

After constructing the benches the space underneath can be planted with ferns and many other pretty things which will quickly fill up the hole, even though it be five feet deep. The best walls are made of common brick without finishing. Plant in the ground some pieces of *Ficus repens* and English ivy; these will soon cover the walls, and they look well at all seasons. *Asparagus plumosus* will run up a post from the ground beautifully in a house of this kind, and a host of other plants of like utility and elegance will speedily suggest themselves to the interested proprietor of a conservatory of this character, giving to it in one year more decorative effect than the most skillful mechanic or fresco painter could evolve in a lifetime. And this is merely the result, pleasing as it may be, of work which in itself is a joy to the heart. Simple, isn't it! And all for the money ordinarily put in a bay window!

C. B. W.

HORTICULTURE IN HOLLAND.

The following lecture was recently delivered before the Massachusetts Horticultural Society by Mr. John K. M. L. Farquhar:

Holland presents to the horticulturist many interesting features of her own. For two hundred years she has supplied the nations of northern latitudes with bulbs from which to raise flowers to brighten their conservatories in winter and their gardens in spring, and she has established a constantly increasing business, the monopoly of which seems assured to her for ages to come. Her exports of bulbs and nursery stock now aggregate five million dollars annually.

Such elaborate flower stores as we have in Boston are not found in Holland. As we pass through Rotterdam or Amsterdam we see a flower market where a few men and women do the business, the flowers being chiefly of the more ordinary kinds, brought there in the morning and sold at low prices, and by noon the busi-



IN THE ZOOLOGICAL GARDEN, ROTTERDAM HOLLAND.

ness is over. Dutch horticulturists devote most of their energy to supplying the wants of other nations, their home trade—especially in cut flowers—being exceedingly small.

In Holland we find no such gigantic greenhouses as may be seen on large estates in England, such as Chatsworth or Sion House, hardy trees, shrubs, vines and herbaceous plants being more generally depended on for landscape decoration. This policy we find successfully exemplified in Boston's new parks. Many of the residential streets and even the narrow business streets of Rotterdam have valuable space devoted to trees—more, I think, than our citizens would be willing to allot under similar conditions.

Haarlem is the largest city of North Holland, and the tradecenter of the bulb-growing district. If we proceed by steam train from Haarlem by way of Vogelenzang we pass through extensive bulb fields, towards the Lake of Haarlem. There is, however, no Lake of Haarlem now; only a great canal, surrounded by seventy square miles of lowland that fifty years ago was lake. Here on the western side of the canal we find the finest hyacinth ground in Holland. The soil is of various kinds—peat, clay and sand; the last being what is chosen for hyacinth culture. It is prepared by giving it a heavy application of cow manure, which is brought to the fields in boats from Leyden, Amsterdam or Rotterdam.

Hyacinths, narcissuses and tulips are set in trenches six inches deep; crocuses, scillas and snowdrops in trenches three inches deep. Before the cold sets in all the planted fields are thickly covered with reeds, which grow along the edges of the canals, and are cultivated in the north of Holland for this purpose. Great care is taken to prevent frost from reaching the bulbs, for as they are planted early in autumn they soon make long roots, and frost reaching the bulbs would raise them up and detach them from their roots. Spring flowering bulbous plants are rapid growers, requiring a large supply of nourishment, and unless their roots are well developed in advance of the top and kept in good condition, they will be unable to furnish the needed food, and failure, or partial failure, will result.

Large growers are prepared to furnish from four to five hundred sorts of hya-

cinths. Now, we prefer the single varieties, and the list of sorts is not as long as formerly. The propagation of hyacinths is by offsets, which form at the base of the bulbs. The largest bulbs are cut across the base several times or hollowed out, to increase the number of offsets which are formed. More of the single pink variety, Norma, is grown than any other. One grower's trade requires 80,000 of them annually, the product of about two acres.

The average grower must cultivate in all about four hundred and fifty varieties of tulips. Of these about four hundred are varieties of the ordinary garden species. *Tulipa Gesneriana*, which was introduced to Western Europe from Turkey in 1554. Tulips are propagated by offsets, each root producing two, or sometimes three, salable bulbs, and perhaps one or two of smaller size, which require another season's growth before they are fit for market. They are also easily raised from seeds, the seedlings coming at first self-colored; while they remain so they are known as breeders. These have been made very popular recently under the name of Darwin. After a few years of cultivation they break away from their original color. If a white tulip comes striped or marked with another color, it is called a bybloemen. Of this class the rose or red-tinted bybloemens known as "roses" are perhaps the most desirable. A tulip having a yellow ground marked with another color is called bizarre.

In the early part of this century tulips having variegated flowers were most esteemed. To-day such self-colors as Gold Prince, the beautiful rose-carmine Proserpine, Vermilion Brilliant and the white, yellow and scarlet Pottebakkers are most esteemed. There are, of course, exceptions; the most conspicuous is the noble Keizerskroon, crimson with a wide edge of yellow. The tulip has become with us the most popular of the spring flowering bulbs. We use from a million and a half to two millions here in New England annually.

Daffodils are now receiving more attention from hybridizing than any other class of bulbs. Although the largest and finest bulbs come from Holland, they are extensively grown in England, Ireland, the Island of Guernsey and France.

Japanese lilies are seldom grown in Holland; the Dutch dealers find it cheaper to import them from Japan.

The bulbs are lifted by hand, as spades or forks might injure them. They are carefully laid in baskets and conveyed by boat to the warehouses, where they are carefully dried and counted out into bags. When needed for shipment, buckwheat chaff is put in to prevent bruising. The value of bulbs exported annually from Holland aggregates three million dollars, the United States taking about \$300,000 worth.

On the southerly side of the Lake of Haarlem are the nurseries of Boskoop. We see in these nurseries many plants which are not hardy enough to survive our winters, for many of which there is a large demand from England.

Entomological.

NOTE ON THE STRAWBERRY ROOT LOUSE.

The strawberry root louse (*Aphis forbesi*) is scattered over portions of the middle Atlantic states, and through a number of the central states. The distribution of the species cannot be definitely determined at the present time, as the insect has been generally overlooked by economic entomologists. Its presence has also escaped the notice of many strawberry growers who have suffered worst from its devastations. The complaint is not infrequently heard that certain fields from an unknown cause will not produce a crop, that the stand of plants is poor and that the area has a spotted appearance. Whenever a case of this kind is reported the suspicion is at once aroused that the strawberry root louse is present and is responsible for the trouble. The little green aphides suck the juices from the roots of the plant, which wilts and dies. The attacks may be confined to a number of areas in the field from which the aphides radiate, or they may be scattered generally throughout the patch.

Its presence can always be detected by the numerous ant hills, a little yellowish white ant attending the species. It is probable that the ants play an important part in distributing the aphides. No winged form of the species has been observed, so the infestations are brought in

on new plants, or the aphids may have been in the ground, if old berry plants recently occupied it. The aphids may also spread from adjacent infested beds to the newly set fields by the ants or by slow distribution themselves. They appear in the first warm days of spring, hatching from the jet-black shining eggs that are found scattered in the crown and on the leaves of the plant. At first they multiply slowly on account of the cool weather, but during the summer their reproductive powers are extremely active. Late in the fall the eggs are laid, though the males have not been observed. Many of the females probably winter over beneath the ground in the warmer latitudes. Whether the aphids feed on other plants is not yet known. It is thought by Mr. Pergande, of the Division of Entomology, at Washington possibly to be a form of *Aphis gossypii*, the melon louse, which includes an extensive list of plants in its menu.

Just how to treat the aphids best is not well known. The surest treatment is to get clean plants and to be sure the land in which they are put is clean. They flourish well in kainit when applied at the rate of 1,000 pounds, per acre, and in muriate of potash at 500 pounds per acre. If they should be discovered in spring when hatching out, a dose of kerosene emulsion would kill many of them, and a small handful of tobacco dust around each plant has driven them completely out in some cases, while in others it has failed; but the failure may have been due to poor tobacco. If the aphids are in the nursery the means of clearing the plants at shipping time are not well known. As far south as Delaware the insects are mostly hatched and can be seen on the plants in the bundles, but a few of the eggs may still be unhatched and serve to carry the pest into new fields. The living aphides can be killed by dipping the plants in strong tobacco water, but this treatment has not proven sufficient to kill the unhatched eggs. It is possible that the hydrocyanic acid gas treatment would kill the embryo aphids in the egg and this point will be investigated the following spring. The writer would like to hear from any reader of GARDENING who has had trouble with this pest, so that its distribution may be worked out as soon as possible.

G. HAROLD POWELL.
Experiment Station, Newark, Del.

Publications.

BOOKS AND BULLETINS.

INDOOR CULTURE OF LETTUCE.—By J. C. Arthur.—Purdue University Experiment Station, Lafayette, Ind., 1897.—This is a condensed account of some experiments in lettuce culture in which the following were the prominent features: Some uses of commercial fertilizers, thick and thin planting, use of pots plunged in the beds and a method of sub-watering. The thicker setting, it appears, gave the heavier yield, and the results of sub-watering were satisfactory beyond the most sanguine expectations.

THE BLACK ROT OF THE CABBAGE.—By Erwin F. Smith.—Department of Agriculture, Washington, D. C., 1898.—The present methods of growing cabbages, it is held by the author, are responsible for the introduction and spread of this disease, which is known to growers in various parts of the country under several different names, the commonest of which are "stem rot" and "black rot." The serious character of the trouble is shown in the statement that at Racine, Wis., the damage from the black rot during the past three years probably exceeds \$100,000. So far no way is known of curing the disease or of entirely ridding a locality of it when once well established. Mr. Smith maintains that prevention is the only safe course to pursue, and the bulletin includes a number of rules which may be followed with advantage.

LESSONS WITH PLANTS.—By Prof L. H. Bailey.—The Macmillan Company, New York, 1898.—It used to be said that doctors differ. While that may be the rule, we find a notable exception in the introduction to this work. Prof. Bailey says: "It is a common method to begin the study of plants by means of formal ideals—or definitions,—but the author believes that the proper way to begin it is by means of plants." Sir Joseph Hooker gave expression to the same idea many years ago when in his useful primer he stated that "the study of botany is best commenced by the careful observations of the different parts of living plants." This is a truth which we believe has been long recognized, but the chief difficulty in the way of its application may be traced to the scarcity of natural specimens during the common school year. While we cannot undertake to say that the average beginner in botanical studies will make much progress without the aid of a careful teacher, the more intelligent should certainly find "Lessons with Plants" a helpful work for consultation in vacation time, and to a large extent the excellent illustrations will supply the place of natural material and models in the schoolroom. The book has a good appearance, and it is well printed. It seems, however, to be too big, too imposing to place in the hands of a beginner, and a trifle clumsy for other than schoolroom use. Botany is one of those things that should be given in small doses at first. The author indeed makes this assertion when he says: "It is a common mistake, in instructing beginners, to teach them too much at one exercise." When we consider that he has given us a book of close upon 500 pages for beginners, it can hardly be claimed that he has followed his own good advice.



LIFTING BULBS IN HOLLAND.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES OF YOUR experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES OF YOUR flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE STURDY CANNA, so long exempt from serious ailment, has at last become the prey of a deadly rust.

THE AMERICAN CARNATION SOCIETY will meet in Chicago February 17 for its annual convention, which will continue two days.

IF "SUBSCRIBER," who makes inquiry concerning fertilizers, will send name and address we shall be pleased to supply the desired information.

THE VALUE OF A TOAD in gardens and gardening is shown by the careful estimate that a single specimen destroys in a year insects which, if they had lived, might have damaged crops to the extent of \$19.88.

THE WATER HYACINTH, which has been the source of so much inconvenience in the sluggish streams of Florida, is believed to be not entirely eradicable. Among other means of keeping it in check the agency of disease is suggested.

THE MOST PECULIAR form of insult we have ever heard of is one which, according to a foreign contemporary, exists in Germany, where to offer a rose, or any other flower, without any green or leaves with it to a lady is to deeply insult her, though why this should be so is not known precisely.

APROPOS OF THE NOTE ON market mushrooms in our last issue, some wicked wag sends us the following from an English Journal: "Clergyman:—'My child, be-

ware of picking a toadstool instead of a mushroom; they are easy to confuse.' Child:—'That be all right, sur, that be. Us bain't agoin' to eat 'em ourselves—they're agoin' to market to be sold.'"

A DISADVANTAGE OF WIND-BREAKS, says a recent writer, is the favorable conditions they sometimes afford to the development of plant diseases, especially apple blight in the West and grape diseases in the East. Wind-breaks may also in rare instances either prevent or induce frost. The protection wind-breaks give to insects and birds is sometimes detrimental and sometimes beneficial.

ONE OF THE LATEST Paris fashions in relation to the use of flowers for personal adornment, says the *Gardeners' Magazine*, is the wearing of belts of flowers. The majority of the French ladies prefer belts made of Parma or Neapolitan violets, small roses, or pansies. The belt is completely covered with the flowers, which are sewn thickly together on a plain band of silk elastic, great care being taken to use the finest silk of exactly the same shade as the flowers chosen.

CELERY BLIGHT AS KNOWN in this country exists in two distinct forms, and according to Mr. Duggan, of the Cornell University Experiment Station, these are distinguished as early celery blight and late celery blight. Hot weather tends to increase the former, and moisture does not necessarily check it. The late blight, unlike the early, does not disappear with the cold weather, but continues in the field until the plants are lifted and then extends its injuries to the storage cellar. In this disease the outer green leaves wilt and soon the fungus spreads to the younger blanched leaves, wilting and discoloring them. The plants in the field should be sprayed regularly with a weak solution of ammoniacal copper carbonate to prevent the appearance of the diseases, dipping the leafy portions of the plant in the same preparation and removing the badly affected leaves before storing the crop. The storage cellar should be kept but little above freezing temperature, free from excessive moisture, and given good ventilation.

PARK AND GARDEN POLITICS now constitute a feature of horticulture to which our professors have not given sufficient attention in the past, with the result that some of our most talented gardeners are even as shorn lambs in a den of hungry wolves. The case of Mr. Pettigrew, of Chicago (now of Boston), is still fresh in our minds, when Mr. Otto Buscek is ousted from his position as superintendent of the parks of Patterson, N. J., for no reason other than that of the most corrupt political expediency. Now Mr. Parsons of New York has resigned, and no doubt an inside view of this case would disclose an equally interesting state of affairs. The old attack on Mr. Doogue as superintendent of the Boston public grounds is renewed, and none can predict where next the hydra-headed monster of destruction may appear. If these and other old servants of the public have not discharged their duties faithfully and well why have they been tolerated so long? If they were not competent, why were they engaged at all?

HENRY A. DREER ESTABLISHED the flourishing business which still bears his name, sixty years ago. From the first the firm has been noted at home and abroad for the thoroughness and enterprise with which every department of the seed and plant trade has been managed, and it is

to this, with unwavering honesty of purpose, that the concern owes its present position in the front rank of the world's great merchants. Those gardeners who remember the founder of the house, and there are many of them, had the utmost confidence in his every word, and we all know how admirably this reputation has been maintained by his successors. Mr. Henry A. Dreer died in 1873, and the business has since been conducted by his son, Mr. Wm. F. Dreer, with all the zeal of his illustrious parent. Well indeed may the concern, in celebrating its sixtieth anniversary, rejoice in its achievements; and since it has been always a potent factor for good in our favored pursuit, we can and do on behalf of this journal and its patrons extend the heartiest congratulations to Mr. Wm. F. Dreer and his able associates. A beautiful souvenir of the occasion has been prepared by the firm, which may be had on application.

A MEETING OF UNIQUE HORTICULTURAL interest was held in Boston Saturday, January 15. There were present Col. F. H. Appleton, president of the Massachusetts Horticultural Society, Prof. S. T. Maynard of the Hatch Experiment Station, Prof. F. C. Sears, director of the Provincial School of Horticulture, Wolfville, N. S., Mr. John Craig, late Dominion Horticulturist, Ottawa, Ont., Prof. F. Wm. Rain, of the New Hampshire Agriculture College, Prof. W. M. Munson of the Maine State College Prof. B. M. Watson of the Bussey Institution, Boston, Mass., Prof. F. A. Waugh of the University of Vermont. Mr. J. G. Jack of the Arnold Arboretum, Boston, Mass., Prof. L. F. Kinney of the Rhode Island Agricultural College, and Mr. S. A. Beach of the New York State Experiment Station. For some time teachers and professional experimenters in horticulture have felt the need of an organization that should bring them into closer touch with each other and give more system to horticultural instruction and experiment and provide a convenient opportunity for the interchange of horticultural ideas. The Boston meeting was arranged by Professors Munson of Maine and Waugh of Vermont. It was decided that the organization should be known simply as "The Horticultural Club." A committee on organization was elected consisting of Professors Munson, Watson and Waugh. The only organization in this country similar to The Horticultural Club is the Association of Official Agricultural Chemists. The Horticultural Club may be the nucleus of a permanent and important organization. It certainly has great possibilities.

QUESTIONING THE SOIL.

The following address was delivered by Prof. I. P. Roberts, of Cornell University, before the Western New York Horticultural Society last week, on the occasion of its forty-third annual meeting at Rochester, N. Y.:

Since 1860 a large number of trained scientists have worked faithfully and intelligently with the view to discover the composition of the soil, the amount, kind and character of the plant food which it carries, the proportion of available and unavailable constituents, together with the combination and proportion of the valuable elements with those which are valueless or of little value. The physical characteristics of the soil and subsoil, climatic influences, precipitation and soil moisture, all have received most careful scrutiny by trained, painstaking investi-

gators. The composition of a multitude of plants has been determined. Not to weary you with details, it may be said that the scientist has given to the farmer many, very many, new and valuable facts. At no period in the world's history has there been such an interest in science and its application to rural affairs as during the last twenty-five years. The public press of America teems with the results of this army of investigators.

Is there danger that the farmer will become cloyed and unable to digest this vast array of facts? These facts secured in the laboratories must be applied by the tiller of the soil at the right time, in the right place and with suitable environment, or they will be of little use to those for whom this vast labor has been undertaken. Much has been done by the experiment stations and colleges for the rural population. Is it not time for the farmer to put his shoulder to the wheel and help himself by making an application of the knowledge which has been so freely furnished to him? Before the scientific truths can be of full value to him he must learn how to use them wisely.

In other words, he must become an investigator. He must question the soil and the plant. To do this he will have to learn, for he has not been trained, how to see accurately, and the way to get this training is to have interesting objects to see. These objects must be those which have an economic value and they must be at hand on his own land where he can watch them, become acquainted with their habits of growth and development, their likes and dislikes. Many forces are acting, and varied conditions are present during the life of the plant, all of which must be studied before conclusions can be drawn.

The farmer now has unexcelled facilities for securing vast stores of useful and pleasurable knowledge at his home. This paper is written with the distinct view of pleading with the farmer to make the best possible use of these facilities that he and his children may no longer be called "clod-hoppers" but take their places among those who follow honorable and learned professions.

Take one of the many bulletins which have been issued during the last year. Study it as carefully as you should study the Bible. Get thoroughly saturated with the subject and then go to work on some line of research. Begin with the soil, take as proven what you find in the bulletins and give due weight to the results reached by other experimenters. Try all things, hold on to that which is good. Fit your experiment to your tastes and environment, measure and weigh accurately and take full notes of all conditions. Try but one experiment at a time and aim to discover but one truth at a time. The stations and colleges will be of comparatively little value in the future to agriculture if the knowledge secured is not applied to your particular case, subject to the home conditions. The chemist can tell you only a fraction of what you should want to know. The knowledge he has secured will be as valueless to you if you do not use it as are the postage stamps which are locked up in the safe if they are never used. The experiment stations, and I believe I speak the sentiments of the state as well as of the federal station, wash their hands of the responsibility which rests with you. If you make no use of the information which their publications contain the sin be upon your own heads.

But you may say all this is too indefi-

nite. Then let us be specific. Ask questions of the land in your orchard. Take two or ten rows of trees—find out if those trees like potash, phosphoric acid or crimson clover. Find out if those trees are dry. Find when and how they prefer moisture. Commune with that old dried up pasture, find its ailments and a remedy for them. The experiment stations can give you only a little counsel and advice as to this sick patient. Look straight into the eyes of the potatoes which you have planted and see how they weep from neglect. See if some bulletin may not help you to alleviate the suffering of this much abused tuber.

Opportunity presents itself on every hand for questioning the soil. The information you desire can only be secured by yourselves. I appeal to you who are gathered here to-day and who are among the more intelligent farmers of this state to give this matter your most careful consideration and come up here next year with facts gleaned from your own investigations—so many of them that we old professional speakers will be crowded off the stage.

VERMONT HORTICULTURAL SOCIETY.—The Vermont Horticultural Society held its annual winter meeting at Middlebury January 11 and 12. The president, Mr. T. L. Kinney, a prominent apple grower of South Hero, and secretary, Professor Waugh, of Burlington, were re-elected. The meeting was devoted almost entirely to pomology. All the papers on the programme were interesting and practical. Professor G. H. Perkins, speaking on "Orchard Insects," said in part: "The forest tent-caterpillar has been unusually abundant and destructive the past year. Prevention is better than cure, and the pests may be largely prevented by destroying their egg clusters when the trees are leafless in fall or winter. The oyster-shell scale has been very injurious in some orchards. The best remedy is spraying with kerosene emulsion about the last of May and again early in June. The San Jose scale has appeared in one place in the state. The round-headed apple borer is best prevented by a coat of strong alkaline wash or kerosene emulsion. In spite of the cold climate in this state the apple has been gradually introduced, thanks to crab and dwarf apples and Russian varieties. Especially native hardy seedlings have been selected and better orchard practice adopted, till now apple orchards are generally distributed throughout the state, and in some sections the fruit is grown on a commercial scale." The society agreed on the whole that the varieties best suited to Vermont are Baldwin, Rhode Island Greening, Northern Spy and Fameuse, though it was generally understood that this list is not satisfactory, and hence not without criticism. Among grapes, only the earliest varieties should be planted, such as Green Mountain, Moore's Early and Wyoming Red. But these can be grown in nearly all sections of the state for home use, and in some parts commercially for the supply of local markets. Vines should be covered in the fall and special attention paid to ripening the fruit, which should be left on the vines as long as possible. During recent years plums have received considerable attention. There is an especial interest in the Japanese varieties. These have been thoroughly tested in various parts of the state. The varieties recommended are Red June, Abundance, Burbank and Chabot. Of these the Burbank is the most successful commercially.



F. L. HARRIS

WORKERS IN HORTICULTURE. II.

The name of F. L. Harris, whose portrait appears above, is familiar to all our readers, and deservedly known far and wide through his long labors in connection with the most elaborate private garden in America, namely, that of Mr. H. H. Hunnewell, at Wellesley, Massachusetts. Here every form of ornamental horticulture is given that generous treatment which only a master hand may attempt, and Mr. Harris has been unusually fortunate in the result of his efforts, as the numerous illustrations of his work which have appeared in these pages from time to time fully demonstrate. Nature has helped him to some extent, for the site of the estate is an ideal one. But his is the art which mends nature, and he has not been behindhand in taking advantage of the opportunities presented. Mr. Harris has been favored also in having a keenly interested employer, and it is pleasing to note that for forty four years he and Mr. Hunnewell have been linked together in the common cause of horticulture. Mr. Harris was born in England in 1822.

Fruits and Vegetables.

GRAPERY WORK.

The vines in general will be pruned by this time, but if there are still some awaiting the annual trimming, they should be given prompt attention that the wounds may have proper time to heal over before the canes start into new growth. The wounds of the vines made in pruning are not coated with paint here, as is the rule of most places in this part of the country, but dressed with shellac. Both vines and houses should now be thoroughly cleansed. Any common washing powder may be used in removing the dirt from the woodwork of the houses, but it should not be prepared very strong as it will then injure the paint. Ordinarily I find about a teaspoonful in a pail of water to answer the purpose.

In washing the vines I use whale-oil soap, and find it quite efficient, applying it with a soft cloth in the case of young canes, and employing a soft scrubbing brush where they are old and rough. A



BLACK HAMBURG GRAPES AT WHITINSVILLE, MASS

smaller brush, much like a tooth brush only softer and larger, is used around the eyes, and the end of the handle, after it has been given a rub on the grindstone, is very handy in removing the loose bark around the spurs and elsewhere. The removal of a portion of the loose outer bark is a necessity, for otherwise it is practically impossible to get rid of injurious insects and their eggs. But this must be done with care, so as not to hurt or expose the solid wood, and before attempting it I always prefer to give the canes a thorough wetting with soapy water. Some short time after the whale-oil mixture is applied, the eyes and spurs in their immediate vicinity should be washed with a sponge and clean water.

Whale-oil soap comes to us in packages to all intents and purposes the same, but in stern reality hardly two of them are alike. The strength of the article varies very much, and if one could afford the time it would be an advantage to test each package. But in the absence of some such testing it is well to observe caution, for I have noticed that where the vines (including the eyes) have been given a strong dressing of whale-oil soap in solution many of the eyes failed to start. This trouble, of course, as in all such cases, has been attributed to anything and everything, but I am now convinced that the whale-oil soap is alone to blame, or rather, perhaps, its quality of varying in strength. Were it of even or regular quality, we could quickly learn to gauge and apply it to a nicety, and that with much economy of time and

labor. But we must take things as we find them, and whale-oil soap is very good when used with care and judgment.

The borders here are all inside, and when the vines and houses are cleaned I have all the loose soil taken away. This is something that cannot be done properly with spade or shovel, for the roots run well up to the surface. The soil therefore must be removed by hand, and even by this method the roots are sometimes disturbed to a greater extent than is good for them. But as the roots must have something fresh to live on, there is no help for it, and the deficiency must be made good now or preparations made for the application of large supplies of liquid manure. There is much economy in the former plan. The borders cleaned, the hose is turned on until they are thoroughly saturated with water. The borders are then allowed two or three days to dry, when they are given a liberal top dressing of turfy loam, adding to and thoroughly mixing with the same a small proportion of fine bone and wood ashes. The houses are then left pretty much to themselves until such time as it may be necessary to start the vines, keeping them as cool as possible, or at a temperature only sufficiently high to prevent the water in the pipes from freezing.

The accompanying picture shows a house of Black Hamburg grown on these lines.

GEORGE MCWILLIAM.
Massachusetts.

CROTALARIA LONGIROSTRATA, of recent introduction, is gaining in popularity.

MUSHROOM CULTURE.

The growing of mushrooms is rapidly extending year by year, and although there are many who aver that they could never be persuaded to eat toadstools; the taste for them as a form of vegetable diet is also growing, and the demand, more particularly during the winter months, largely exceeds the supply. Mushroom culture is nevertheless something of a lottery, for first-class practical gardeners, with every requisite of success apparently at command, sometimes fail to sight the eagerly scanned for button, while cases are known in which amateurs at their first attempt, under what would appear to be doubtful conditions, have raised surprising crops. It is probable there is no other known vegetable the cultivation of which is so much a source of interest and wonder to the beginner as is that of the mushroom.

Special mushroom houses are provided on some few private places, but as a general rule both private and commercial growers more frequently utilize cellars and the space under greenhouse benches for this purpose. The best mushrooms the writer has seen in Massachusetts are grown underneath the benches of violet houses, where an average night temperature of 47° is maintained in midwinter. A sight of several houses, each 150 feet long, thickly dotted with fragrant violets above and literally swarming with the toothsome esculents below is when once seen not readily forgotten. I have had good crops under carnation benches, and know several growers who raise large supplies

in such places every year. I now grow them in a cellar where the temperature varies from 50° to 55°, very seldom higher, and never fail to have good results. I would prefer a uniform temperature of 60°, but not being able to have this, must get along with the lower figure. But less, I think, depends on the temperature of the cellar than on the careful mixing of the manure, thoroughly pounding the beds spawning at a proper temperature, leaving the bed uncovered by soil while steam is escaping (say from a week to ten days after spawning) and on maintaining a suitable moisture of atmosphere.

It does no good to lose patience if mushrooms fail to appear in the regulation time of five or six weeks. I have known them to show in four weeks, and on the other hand a bed which had been looked upon as a total loss gave a fine crop after twelve weeks of weary waiting. Usually, however, they show in about six weeks. The first bed of the present season did not show any pinheads for eight weeks, while a bed similarly made in the same cellar, using the same brand of spawn, came into bearing in less than five weeks. Those who have a cellar or some vacant space underneath the greenhouse benches, with a temperature anywhere between 50° and 60°, will find the early part of February a good time in which to start a bed. The first and most important requisite is a supply of fresh horse droppings from grain fed animals. This should be collected every day if possible, removing the coarse straw. When a sufficient quantity has been collected and turned over regularly for some days to let the rank steam escape (a shed open on one side or an empty horse stall are suitable places for this work), mix the manure with one-fourth its bulk of loam. The beds here are made from ten to twelve inches in depth, placing the manure in layers and pounding it as hard as possible with a wooden mallet or some similar implement. When the bottom-heat thermometer indicates a declining temperature in the bed, it is spawned with the heat at about 90°. I have tried spawning at 95° with equally good results, but below 80° the crop is never so satisfactory. A covering of moist, heavy loam is spread over the bed to a depth of two inches when the steam has escaped and beaten firmly, scattering a little hay on the surface to prevent rapid evaporation.

An examination of the beds is made once a week, and where dry spots occur water at a temperature of 100° is applied. Watering is looked upon as a dire evil by many growers, but in those cases where a bed was slow in coming into bearing I have found that a drenching of tepid water causes a fine crop to appear almost in a twinkling. The spawn imported from England by the leading seed merchants and known as "Milltrack" is the most reliable for general purposes. I have tried spawn made in Massachusetts which also gave good results. For the benefit of those readers who may not be familiar with mushroom spawn, it should be stated that this material consists of a mixture of manure and soil into which the mycelium or vegetative part of the mushroom has been introduced. The presence of the mycelium is indicated by whitish, thread-like matter in the soil, and it is from this peculiar substance that our mushrooms are developed. For convenience in storing and transportation the spawn is put up in the form of bricks. The compost used as a base for the mycelium is prepared from horse droppings, cow manure and good loam, which by the addition of stable manure liquid are brought to the

consistency of a stiff mortar. This is then shaped in bricks of the desired size, which are placed on edge under cover until they become partially dry. A hole about an inch square is then made in the center of each brick, and the cavity filled with mycelium-charged soil from an old mushroom bed or such other source as may be available, plastering the surface of the opening again with the material of which the bricks are formed.

A hotbed twelve inches thick of fresh stable manure is now made ready on a dry bottom, and the bricks built in a pile over it with a vacant space between every second one, after which the entire mass is covered with stable manure or straw litter, imparting a gentle heat to all the bricks. In two or three weeks the mycelium will have spread through every portion of the bricks, which are then thoroughly dried by exposure to sun and air and stored in a dry, cool place until required for shipment or for spawning mushroom beds. As most growers only require a few bricks of spawn, it is scarcely worth the trouble of manufacture for home use unless one with plenty of time at disposal is fond of experimenting in this direction. Purchased bricks that do not show the mycelium plainly are not of the best quality, and should not be used if others can be procured. In spawning the beds, the bricks are broken in pieces, each about the size of a walnut, and inserted in the manure. Smaller fragments, however, should not be discarded, as they also will produce mushrooms in many cases.

W. N. CRAIG.

Massachusetts.

Societies.

HAMILTON, ONTARIO.—A horticultural society has recently been organized here. At the first meeting eighty members were secured, and it is expected that the number will soon be more than doubled. A. Alexander was elected president, W. F. Burton first vice-president, Jas. Ogilvie second vice-president; Jas. Anderson, J. Cape, J. Knox, Sam. Aylett, F. G. Foster, T. F. Evel directors; Thos. Burns and J. C. McKeand auditors, and J. M. Dickinson secretary-treasurer. Open meetings will be held on the first Monday of each month, and exhibitions, to be held in summer and fall, are to be free to both exhibitors and the public.

WISCONSIN SOCIETIES.—On February 1, 2, 3 and 4 a joint convention will be held of the Wisconsin State Horticultural Society, the Wisconsin State Forestry Association, and the Wisconsin Cheesemakers' Association, and the alumni of short course school. The meeting will be held at Madison, and the headquarters will be at the Capitol house. Following are the officers of the societies: L. G. Kellogg, president, A. J. Phillips, secretary, State Horticultural Society; B. S. Hoxie, president, S. L. Cheney, secretary, Forestry Association; A. S. Baer, secretary, Cheesemakers' Association; W. A. Moore, in charge of the alumni.

NEBRASKA STATE HORTICULTURAL SOCIETY.—The annual meeting of this society closed its session January 13. It was decided to hold the next meeting in Omaha some time during the coming summer. The state meeting of the Iowa horticulturists will be held in Council Bluffs simultaneously with the Nebraska meeting, and invitations have been exchanged. Prof. G. D. Swezey of the university read a paper on "An Elec-

trical Method for Determining Soil Moisture." Mr. C. H. Van Meter told "Why Our Transplanted Trees Die." Mr. J. M. Russell, of Wymore, who owns the largest peach farm in Nebraska, spoke of his experience in raising different varieties of peaches. A resolution endorsing the plan of the American Association of Nurserymen in preventing the sale of infected nursery stock was adopted. Mr. W. G. Edwards, for the Iowa society, expressed thanks for the manner in which delegates from that state had been treated during the meeting.

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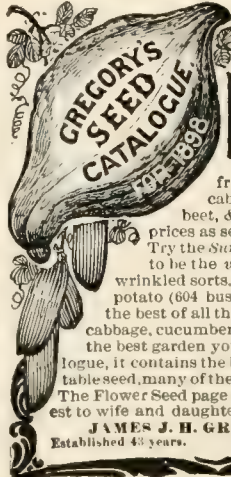
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WESTERN NEW YORK HORTICULTURAL SOCIETY.—The forty-third annual meeting was held January 26 and 27. The attendance was large and great interest was taken in the proceedings. The papers read and discussed were of much value, and are as follows: "Food Value of Fruits," Prof. W. H. Jordan, Director of New York Agricultural Experiment Station, Geneva. "Questioning the Soil," Prof. I. P. Roberts, Director of College of Agriculture, Cornell University, Ithaca. [To be found elsewhere in this issue.] "Relation of Our Public Schools to Horticulture," George T. Powell, Ghent, N. Y. "Plant Food Demands in Fruit Growing," Dr. L. L. Van Slyke, Chemist, New York Agricultural Experiment Station, Geneva. "Experiments in Fertilizing Orchards," Willis T. Mann, Barkers. "The \$200 Cash Prize Fruit Exhibit at the State Fair," H. S. Wiley, Cayuga. "Suitable Manure for Fruits," Prof. H. E. Van Dieman, Parksley, Va. "Does the Application of Wood-Ashes to Orchards Have Any Influence on the Immunity of Apples from the Scab?" S. A. Beach, Horticulturist, New York Agricultural Experiment Station, Geneva. "Result of Two Years' Work With San Jose Scale," Prof. W. M. B. Alwood, Virginia Agricultural Experiment Station, Blacksburg, Va. "The Economic Value and Protection of Some of Our Common Birds," H. A. Surface, Zoological Department, Cornell University, Ithaca. "Bugs from a Bug Standpoint" and "Report of the Committee on Entomology," illustrated with lantern slides, M. V. Slingerland, Assistant Entomologist, Cornell University, Ithaca. Special interest was taken in the "Question box," which was prepared with great care, so as to include the questions upon which fruit and flower growers are

most interested. A number of students from the College of Agriculture at Cornell, under the charge of Prof. I. P. Roberts, attended the meeting in order to enjoy the benefits to their vocation which the discussion of practical farmers afforded.

CATALOGUES RECEIVED.

Johnston & Stokes, Philadelphia, Pa., garden and farm manual. Peter Henderson & Co., New York, manual of everything for the garden. S. L. Watkins, Grizzly Flats, Cal., seeds, trees and plants. Chase Nursery Co., Riverside, Cal., trees. James Vick & Sons, Rochester, N. Y., garden and floral guide. W. Atlee Burpee & Co., Philadelphia, Pa., farm annual. R. & J. Farquhar & Co., Boston, Mass., seeds, bulbs and plants. Pape & Bergmann, Quedlingburg, Germany, seeds and bulbs. T. W. Wood & Sons, Richmond, Va., farm and garden guide. Weeber & Don, New York, garden, farm and flower seeds. Henry F. Michell, Philadelphia, Pa., seeds and bulbs.



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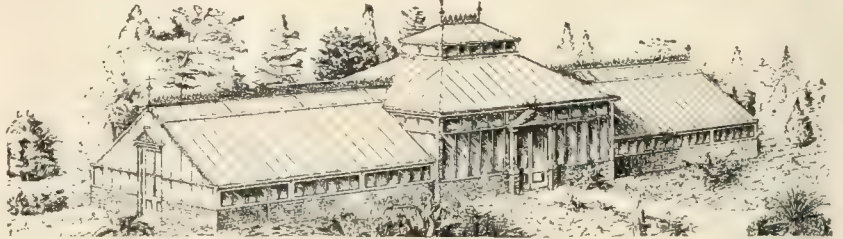
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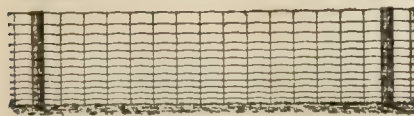
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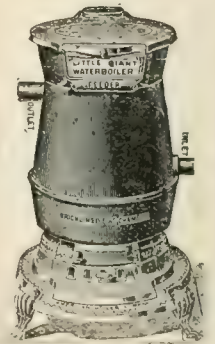
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TRILLIUM GRANDIFLORUM.

The Greenhouse.

TRILLIUM GRANDIFLORUM.

Growers of hardy plants are familiar with this denizen of the woods in our northern states. Wild or cultivated the plant in the open does not bloom much before the latter part of April, and in backward seasons the period of flowering is often retarded as late as the middle of the following month. Come when they may, however, the pure white blooms of the large-flowered trillium or trinity flower are always welcome.

The accompanying picture shows what may be expected of this plant in winter and the early spring months under favorable conditions. To have plants in this state while the snow still covers outdoor vegetation, it is necessary to take up the roots in autumn and plant them in pans or boxes. Pans are better than boxes, for the reason that they last longer, and with proper care the same plants may be made to bloom ever year in advance of their regular time of flowering. A light

but moderately rich soil should be used in planting the roots.

The pans or boxes may be stood outdoors until hard frost sets in, when they should be moved to a cold frame. If this frame has a sunny exposure the plants will bloom there fully a month in advance of similar stock in the open ground, but in order to have them in bloom still earlier they must be placed in a cool greenhouse, or in a frame heated to exclude frost. A greenhouse in which a night temperature of 40° is maintained will suit them very well, and although the plants are found wild in the woods, under greenhouse treatment it will be best to expose them fully to light and sunshine.

With a greater amount of heat the development of the flowers may be hastened still more, but the plants are generally so weakened in the process that they do not bloom so well as those slowly advanced, and the high pressure renders them wholly worthless for any degree of forcing, or even for outdoor culture, the following season. The plants forced moderately will bear the same treatment with good results for several years if they

are properly taken care of as to watering and the renewal of soil during the intervening seasons of rest.

PLANT NOTES.

ASCLEPIAS CURASSAVICA.—Like our native *A. tuberosa* in the brilliancy of its orange scarlet flowers, this tropical herbaceous species from Central America strongly resembles its relative also in the form of the flower clusters. But it is a somewhat difficult plant to grow satisfactorily. It is best to start with spring struck cuttings, growing the plants to single stems in 6-inch pots. Older plants are difficult to get into shape, and often lose their leaves. It is seldom they do well planted out. I never could understand why they always appear to stand still. I have an idea they like plenty of moisture during the growing season, and intend trying them where they can be well watered.

COREOPSIS.—I have grown *C. Drummondii* many years for winter flowers, starting the seeds in August. *C. coronata*,

however, has been used during the past two years, simply because it was thought to be a superior form of *C. Drummondii*. The two are given as distinct species in Nicholson's "Dictionary of Gardening," but it is probable they are only forms of one type, as both come from Texas. *C. coronata* is the tallest and more likely to show the biennial character in going to rest in winter, if not started early. The flowers are of a deep yellow color, with a reddish brown crown, and borne on long, stiff stems. If picked as soon as they open they will last as long as the disk florets take to develop, which is about ten days.

ERICA MEDITERRANEA.—Comparatively little success has attended the efforts of heath growers in this country. Some say this failure is due to the absence of suitable material in which to grow the plants, while it is the opinion of many that our summers are too hot. In *E. Mediterranea* we have an exception to this general experience, and a plant which has the additional recommendation of being almost hardy. It is popularly supposed that heaths need shade, but this species has done well with me in full sunshine. If the plants are trimmed into shape before planting, and pinched occasionally afterwards, they make neat bushes. They may be stored in cold frames, or in pits with evergreens, and moved to the greenhouse a week or two before they are required to bloom. The twiggy stems are clothed with small pink flowers, tipped with black, and the plant has much of the general appearance which renders the common heather so fascinating.

CLEMATIS INDIVISA.—There are few establishments where some cool corner could not be found to suit this grand New Zealand species. At the H. H. Hunnewell place there is a fine specimen trained to the roof of what is known as the orangery. The house is kept at a minimum temperature of 45°, and accommodates besides acacias, euryas, oranges, and the hardiest palms, all of which do duty outdoors in summer time, and are here for a season of rest. The house has a northwestern aspect. From this it will be seen what conditions suit it best. Its blooming season lasts from the middle of March onward for five or six weeks. It bears cutting freely, as the flowers are borne on the current season's wood. Sprays from four to five feet long are produced in abundance, and these are excellent for decorative purposes. *C. indivisa* is to winter and the greenhouse what the Japanese *C. paniculata* is to late summer and the garden.

LYCHNIS FLOS CUCULI FL. PL.—This has given great satisfaction as a winter flowering plant. The single form in the wild state is popularly known as ragged robin, growing so plentifully in moist meadows in the Old World as to be almost beneath notice. The double form makes an excellent rock plant, or for the front rank of the herbaceous border, continuing in bloom from spring until well past midsummer. It is one of the few hardy plants which thrive in the greenhouse in winter. The delicately fringed lilac pink flowers are produced in great profusion for two or three months, and even after being planted out of doors for a summer's growth. I divided half a dozen plants last spring, which made three dozen large enough for 6-inch pots by the autumn. When winter comes they are placed in a cold frame, and likely enough get a touch of frost before they are brought into warmer quarters. This check probably is beneficial, as we have

had occasion to notice in the case of other hardy plants which are intended for forcing. They start into growth readily, soon making good bushy plants.

NEPHROLEPIS.—These are among the most serviceable plants known in gardens. They furnish an elegant and at the same time endurable green. Few ferns possess these qualities, and they are found in none of such easy culture as the nephrolepis. For the dwelling house, stores, and decorations in general where the air is dry, they are unequalled. This may be accounted for largely by the fact that a dry season is one of the climatic conditions imposed upon them in nature. All are readily grown, increasing rapidly by means of stoloniferous growths, as illustrated in the case of strawberry plants. *N. exaltata* is the familiar Boston fern, though why it should be given the latter name is a mystery, for it is not known that the city in question has any particular claim upon the plant. No description is necessary. Some less common kinds are equally valuable. *N. davallioides furcans* is, if anything, more graceful in habit than the Boston fern. The fronds as well as the leaflets are divided. It is distinct in other respects, and may be recognized by a lighter shade of color, and by the absence of a reddish coating along the midrib. *N. falciformis* is a much smaller species which does not appear to have attained the popularity given to *N. exaltata*, but there is no reason for this except that it is dwarfer in habit. It has all the good qualities of its relative, and frequently makes a better pot plant. For a delicate setting to a bouquet it will never displace the adiantums, but there are many persons who prefer a bolder arrangement, and this can be secured by the judicious use of a few sprays of *N. falciformis*. *N. cordata compacta* has recently come into favor, and it is a welcome addition to the florist's limited stock. It has all the enduring qualities of the others, and is of a deeper green color, more glossy, and a trifle stiffer in growth. The fronds arch out gracefully on all sides, which renders it well adapted for growing into a specimen. The nephrolepis do well potted in ordinary loam, with which a small quantity of coal ashes is incorporated, and a minimum temperature of 60° appears to suit them best.

T. D. H.

CARNATIONS AND THEIR CULTURE.

The carnation is one of the most popular winter flowering plants, and for cutting purposes a close rival of the rose. At this season of the year the plants should be at their best, giving good returns in flowers of large size and fine color. The cultural requirements of the carnation are simple, but care and persistence are needed in their application.

Cuttings should be put in during the present month. They start very readily in sand, and should be potted off when rooted, for if allowed to remain in the cutting bench much later they do not make such strong plants. It is a common practice to transplant the cuttings from the sand into boxes, but where space can be given them the pots are to be preferred. The plants lift with little soil attached to their roots when grown in boxes, and for this reason it takes longer to establish them in the soil when planted out in spring. A better way is to transfer them to boxes when the small pots are full of roots. They then come from the boxes with nice balls of soil and receive little or no check in the removal. The plants need less care as to watering when in boxes,

and they can be moved from one place to another more handily.

About the 1st of April they can be placed in a cold frame, and given plenty of air when they once start to grow, at which time the heart should be pinched out of each plant. This pinching will cause them to break and form bushy plants. Toward the middle of May they can be transferred to the garden, planting nine inches apart in rows fifteen inches asunder, the soil having been previously well prepared. They will need frequent cultivation, and pinching will require attention. It is well to go over the plants once a week, removing all flowers. Plants required for summer blooming should be propagated in January, or even earlier.

The plants will be ready for taking up about the 1st of September, and this work should not be delayed much beyond that time, for it is a considerable advantage to have the plants well started before the dull days come on. If they are to be grown in benches, one of the most important points is good drainage. The boards forming the bottom should be an inch apart and covered with a layer of such rough material as sods, sphagnum or decayed manure. Five inches is a sufficient depth of soil, but I generally plant in four inches, preferring to leave space for a top-dressing of richer material. It is well in planting to leave a space of about an inch between the surface of the soil and the neck of the plant. This leaves room for two top-dressings, one in December and the second in February. If the stems were buried clear to the leaves at first, the additional soil of the top-dressings would cause the latter to rot.

It is hard to say just what sort of soil is the best for carnations. Here in Pittsburgh the soil is a heavy clay, and the fifteen varieties I have planted in the benches appear to take kindly to it. I use about three parts of this soil to one of good rotted cow manure, and in top dressing, soil and manure are applied in equal parts, adding a quantity of bone meal. Carnations can be grown very successfully in pots, but need more attention as regards watering. Pot plants should not be grown close together on a level bench, but arranged in terrace form. This permits of a better circulation of air about the foliage, and more plants can be grown in the same space. I have had some success with them in boxes, and would prefer the latter to pots. A good size of box would be four feet long, seven inches wide and five or six inches deep. This would hold six plants of the vigorous kinds, such as Wm. Scott and Portia, and eight of smaller growing varieties like Buttercup and Lizzie McGowan. The boxes should have ample drainage, leaving also, as in the benches, sufficient space for the top-dressings. The plants in boxes would not require such persistent watching in the matter of watering as those in pots, and they afford larger and better flowers.

While the foregoing particulars require strict attention, watering is the most important of all the operations connected with carnation culture. When grown on benches the plants should be examined every day, for different benches in the same house do not dry out at all evenly. The watering should be done thoroughly, when it is necessary to water, saturating the soil through and through. The soil at the bottom of the benches often dries very quickly on account of the pipes underneath, and although the soil is quite moist at the surface, the plants are some-



A HOUSE OF CALANTHES.

times injured seriously by the dry condition of the roots at the bottom. Insects are troublesome when they once get a footing, red spider being the worst of all. This must be kept in check by a free use of the syringe, which should always be attended to in the morning so as to give the foliage an opportunity to dry before night comes on. The cause of so much red spider is in my opinion many times due to negligence in watering, as it is noticeable that the plants which get dry too frequently are the most subject to its attacks. The greenfly can be easily kept under by the use of tobacco stems placed on the pipes and renewed every two or three weeks, taking care, however, to moisten them slightly every night. I find it convenient to tie the stems in little bundles before they are placed on the pipes, thus saving much trouble in their collection again when they have become brittle by heating.

The plants should be cleaned every two weeks, removing all dead leaves and weak shoots, and light cultivation is necessary at the same time. In the latter operation care should be taken that the important feeding roots, usually found close to the surface are not injured seriously. In dis-budding all the lateral buds should be removed when they are small, thus concentrating the whole strength of the stem on the production of one fine bloom rather than several of indifferent quality. When the plants begin to send up their flowers

supports should be given them, and for this purpose I have found one of the galvanized wire devices much handier than stakes, and more lasting. As to temperature, these plants are best suited in an average night heat of 50°, and 10° higher during the day. Air should be given freely in good weather, and when hard firing is requisite, the house should be sprinkled twice daily to preserve the air in a humid state. Among the many varieties the best flowers with me are gathered from the following: Wm. Scott, pink; Lizzie McGowan, white; Portia, red; and Buttercup, yellow. But the varieties are legion, and everyone has his favorite.

DAVID FRASER.

GALANTHES.

Deciduous calanthes are placed under the bench in a temperature of about 60° to rest, as soon as the flower spikes have been cut off. They stay there until the young growths begin to appear again, when they are shaken out of the pots, the roots cut off, the bulbs then placed in shallow boxes or seed pans with a little sand beneath them, and the boxes set on the bench near the light, but shaded from direct sunlight. When the roots appear on the young growths they are ready for potting.

They do well either in pots or shallow pans, the soil used being turfy loam with the fine soil well shaken out. When well

rotted cow manure is obtainable, a little of it may be mixed with the soil, but leaf soil is preferable to green or rank manure, and a little fine bone and sand may be added, the bone having first been allowed to heat and cool off. The pots are filled about two-thirds with potsherds and charcoal, but when seed pans are used, very little drainage is necessary. The compost is put on and pressed down firmly, space for watering being left. Small stakes are inserted to steady the bulbs until the roots take hold. The bulbs are set rather high to prevent the young growths from damping. After a good watering to settle the soil, they are placed in position well up to the glass, and gradually lowered as the growth advances.

Until the first flowers open, the plants should be syringed every bright morning, lightly at first, later on heavier, and this will be about all the water they will need for a time, but when well rooted they take up water freely, and on no account must they be allowed to suffer for it. When the young growths commence to form bulbs, weak liquid manure should be given, once or twice a week for the first few weeks, then every time they are watered until the first flowers open, when the plants should be kept moist with clear water as long as the foliage stays green. Some of the plants will have leaves on when the flower spikes are ready to cut, if care is taken not to expose

them to the bright rays of the sun, and it is desirable that they hold the foliage as long as possible, which will give larger bulbs and consequently stronger flower spikes for the coming year. From strong bulbs we get two, three and even four spikes, and four spikes means sometimes over one hundred flowers to the bulb, but I notice that when a bulb goes to extremes in flowering it starts weak the following spring.

Calanthes require a warm house; the temperature should not fall below 65° at night and 70° is preferable from the time the bulbs are potted until half the flowers are open. After this time they will require little water, and will do in a lower temperature. To keep the bulbs healthy, do not store them where the temperature falls below 50°, nor over the heating pipes, where they will dry up.

The accompanying photograph was taken the day before Christmas and shows only a small part of the *calanthes* that were in bloom here on that day.

GEORGE MCWILLIAM.

The Flower Garden.

SHIRLEY POPPIES.

A distressing drought occurs nearly every year throughout much of the country reached by GARDENING, usually in late summer or early fall, and it is a deterring factor so patent that it probably accounts largely for the barren door yards that abound in villages and surround the country homes of many well-to-do farmers. Where there are public water works, anyone who will may easily and cheaply secure an ample supply, but will and work are essential to success with flowers, when watering them through the dry season means drawing water from a well or cistern and carrying it by the pail or barrelful, and in face of the possibility of the supply being exhausted before "the blessing of the rain" comes.

But this drawback can be largely overcome by judicious gardening plans. Being forewarned should mean being forearmed. My own experience with a soil that takes a malicious delight in drying up and circumventing my efforts—it shows its pleasure by cracking its face into wide-spreading derisive smiles, a dry, diabolical grin that is most exasperating—leads me to think it an excellent thing to circumvent (or should I say aid) nature by devising methods whereby flowers shall be forthcoming drought or no drought. One effective plan is to get an early start. This is best done by opening the campaign in the fall by partly preparing the ground for annuals, etc., by digging trenches for sweet peas, packing in several inches of manure and refilling with earth until the trenches are mounds that will shed water, and by sowing certain seeds such as poppies, miniature sunflowers, *Nicotiana affinis* and other hardy annuals. By this course sweet peas can be sown and some of the roughly prepared ground easily made ready for another sowing of hardy annuals very early in spring, and seedlings from the fall sowing will come up betimes and be sturdy little plants by the time the spring sown seedlings make their appearance.

Poppies should head the list of flowering annuals for duplicate sowings, poppies in variety. Double, single, all kinds and conditions of poppies are good, but I have found the Shirley strain pre-emi-



POPPIES AND GRASSES.

nently satisfactory because of the wide range and variety of coloring and of texture, the long life of the individual flowers (as compared with other poppies), and because of their unusual quality of usefulness for cutting. For cutting, however, care must be taken to select only freshly opened flowers, and they must be cut in early morning, preferably before the sun's rays strike them. Those with petals just shaken from the newly fallen sheath are best. Buds will open after being cut, but the blooms will lack the size and brilliancy of those that open on the plants. Their colors are varied and sometimes peculiar—like chrysanthemums they seem bent on following the fashions—but all are lovely, although not to be indiscriminately combined in the same bouquet. It is necessary to keep the cool pink and mauve shades apart from the scarlet division. But even a small bed will for three or four weeks furnish material enough in each color scheme to satisfy the most inveterate bouquet maker. And it is a pleasure to cut them. Instead of shortening their life, it prolongs it, and they are so beautiful in vases needing only a few of the pretty grasses that are at their best when the poppies blossom to furnish forth a chaste or gorgeous ornament as taste or requirements demand.

I like them best in clear glass vessels, but on the morning that this bouquet sat for its portrait there chanced to be available only a pale green and white

vase of Japanese pottery touched with red and blue on the draperies of the quaint figures, and the poppies looked very well in it. My straggling border of poppies wound in and out along the front of a little plantation of flowering shrubs and it was a delightful mass of color for six weeks and gave scattering blooms for two weeks longer. It represented two sowings as described above, and the last of the flowers were much inferior to the earlier ones in consequence of the coming on of dry, hot weather. There were hundreds of blossoms, a labyrinth of bloom and color. Glowing flowers of dark scarlet satin, thick, smooth and without a wrinkle to mar the shining surface of the rich petals and in the center a black maltese cross surmounted by a crown of black stamens; others orange, scarlet, flame, pure red, rosy red, rose, rose pink, shrimp pink, apricot, salmon, salmon pink, blush, flesh colored, mauve, pearl and snowy white. Some in plain solid colors, others bordered with white from the merest silver thread to a half inch band, and white ones tinged on the edges as by a lightly loaded paint brush dragged softly outward on each petal. Some with, others without a black or a white maltese cross in the center, yet others with the black or white blotch on but two of the four petals. But all wearing a splendid crown of closely massed, dull black or golden stamens in which big bumble bees all black and gold themselves seemed always to be tumbling. There was nearly as much variety of texture as of color. Satin of heavy and of light quality, several sorts of silk, crepe and tissue paper in various conditions, as smooth, fluted, crinkled, crimped and creped.

The border presented some new feature every day. Each morning it was a study and revealed variations from all previous aspects. Poppies so managed may be enjoyed to the full and be finished and gone, the stalks pulled up, and asters or other late bloomers occupying their place if it is desirable, before the arrival of the dreaded drought. By this means the grin on the face of the ground becomes a sheepish expression that makes the victorious poppy grower smile.

FANNY COPLEY SEAVEY.

THE PROPAGATION OF DAHLIAS.

Dahlias are propagated in several ways, by seed to secure new varieties, and by grafting, division of roots and cuttings, to reproduce and increase existing varieties.

Raising new varieties from seed is perhaps the most interesting branch of dahlia culture. However, as it is so uncertain, and as the seedlings do not average up to the same standard as named varieties, it affords greater pleasure than profit. The seeds if sown in the greenhouse in March, potted off and planted out in May, will bloom the same season. The seed can also be sown in a mild hot-bed or frame.

Grafting is another method of increasing varieties that is more interesting than remunerative. It is an excellent method for the amateur, where a new or rare variety is a poor propagator. Take a small or medium sized vigorous tuber and a young shoot of the variety you wish to graft. Cut the base of the shoot to wedge form, but with one side of the wedge thicker than the other, and an eye on the thick side, then cut the tuber to corresponding shape, but a trifle smaller, so as to slip in and make a good joint, pot off and place in a warm shaded place. I

care and skill are used every graft should grow. We usually graft a few each year as curiosities for our friends.

Division of roots is the simplest way of increasing a variety. It is best to have the eyes started slightly although an experienced person can readily distinguish the perfectly dormant eyes. The eyes are on the crown to which the tubers are attached, and not on the tubers, hence in dividing, care must be taken that a portion of the crown containing at least one eye remains attached to each tuber or clump of tubers. This is the original method of propagation, and still used almost exclusively by amateurs and many florists.

Propagation by cuttings is now mostly used by all who grow dahlias in any quantity. When this method is used too much stress cannot be laid upon the necessity of securing good healthy stock, free from disease, and true to name. This is at once apparent, for if the stock is weak or diseased the plants will lack strength, with a greater percentage of losses. That the stock must be true to name is of the greatest importance. Suppose you purchase ten roots of *Nymphaea* and one should be Oban. Oban propagates twice as fast as *Nymphaea* and out of 100 plants you would have a mixture of twenty Oban and eighty *Nymphaea*. If the variety was Frank Smith, and one Bird of Passage was mixed in, the result would be still more disastrous, as the latter makes five cuttings to one of the former. Having secured your stock it should be planted in rich soil in a greenhouse bench, with a night temperature of about 50°; 45° is better than 55° if you are not in a hurry and want strong plants but of course 60° night temperature can be used if you are in a hurry, although at the cost of vigor. Just barely cover the roots in planting. When the cuttings have made two to three pairs of leaves cut them off—some prefer sprouting—taking care that they are cut at the base of two eyes, and placed in sand in the cutting or propagating bench, with bottom heat of 55° to 60°. They will root more quickly in greater heat, but will not be so strong. The length of time required in rooting depends on condition and size of cutting and the variety, and varies from ten days to four weeks, although the attention given has a great deal to do with it. The sooner the cuttings are potted off after being rooted the better, in fact we are so careful that the cuttings are all in the proper condition when struck that we pot off in about two weeks, whether they are rooted or not. Unless they have received some check, they are by that time either just rooting or ready to break.

The cooler the plants are grown the better they will be; 45° to 50° is warm enough at night, although, thanks to a rugged constitution, a vigorous strong growing variety will stand anything from 34° to 100°. The size of the pots does not matter, but it is better to use 2-inch and then shift up for strong plants.

Dahlia plants can be planted as soon as danger of frost is over, and the roots about two weeks earlier; which, in the vicinity of Philadelphia and New York, is about the first of May for plants and middle of April for roots.

S. K. PEACOCK.

THE FROSTWEEDS.

The name frostweed is commonly given in the books to *Helianthemum Canadense*, also called rock rose—a low half shrubby, yellow-flowered plant resembling our shrubby St. John's-wort. "Late in autumn," says Dr. Gray, "crystals of ice

shoot from the cracked bark at the root, whence the popular name." This strange phenomenon, which in the case of the *helianthemum* is sufficiently prominent to give the plant a popular name, becomes really wonderful in some other plants of more luxuriant growth.

Mr. H. L. Freeman, of Cameron, Mo., has in his garden a plant which has attracted much attention in that town during the past four or five years. The plant was found by Mr. Freeman while camping in the Ozarks, whence it was transferred to its present location. The remarkable feature of this plant is the mass of beautiful white, feathery, moss-like ice crystals some inches high which appears at the base of the stems in the fall after the first heavy frost. The delicate tracery of the figures on a frozen window pane will give some idea of the way in which these crystals branch, but no description can do proper justice to their full beauty. The plant is known to botanists as *Verbena Virginica* (crown-beard), but its production of frost crystals has not been hitherto reported.

We find in nature many strange manifestations of beauty in unexpected ways, but none stranger or more wonderful than this post-mortem inflorescence, as it may be called, of plants in the very act of breaking up their tissues.

JOHN HIGGINS.

Trees and Shrubs.

NOTES ON HOLLIES.

It is in the winter season that hollies and other broad-leaved evergreens please the most. The holly because of its beautiful berries and that it has been mentioned so often in song and story is known to almost every one. It is unfortunate that in the northern states the lovely English holly, *Ilex Aquifolium*, is not perfectly hardy. It is, however, hardier than supposed, as to my knowledge it is flourishing in many places about Philadelphia, and yet I am often told by those living here that this holly will not thrive in this vicinity.

Readers of GARDENING will remember the illustration of a fine specimen of a

variety of the English holly which I furnished a few years ago. It was of a specimen growing in the Drexel lot, at Woodland Cemetery, and at that time the tree was about twelve feet in height, according to my recollection. It is an almost spineless variety, and is in catalogues under the name of *I. Aquifolium laurifolia*. This is thought to be harder than the type; at any rate this particular bush has never been hurt in winter.

The common one, *I. Aquifolium*, stands very well anywhere in this city, save where entirely exposed on all sides. Give it the protection of other shrubs or of anything and it will not be hurt. I read recently, in what paper or book I forget, that the variegated leaved English holly was hardier than the normal form. This is contrary to the rule, but it is worth remembering. In many cases varieties are hardier than their parents.

A very desirable holly and addition to our list of hardy evergreens, is the Japanese species, *I. crenata*, which we have the pleasure of illustrating herewith. The bush from which the photograph was taken is growing in Fairmont Park, Philadelphia, where it has stood since the time of the Centennial, in 1876. It is about ten feet in height and the same in diameter. This species is perfectly hardy in any situation about this city. The foliage is not prickly, as in most other hollies. It much resembles the myrtle, *Myrtus communis*, so familiar to European gardeners. Nurserymen should provide a stock of this, for it will surely be in demand.

A beautiful holly from China, *I. cornuta*, is unfortunately, not quite hardy even here, requiring a very much sheltered place. It struggles along but does not thrive. The foliage is like that of the English, but larger every way. Our native hollies are hardy over a larger portion of the country. What a pity they do not possess the beautiful, green foliage of the English holly! Still they are hollies, and though their leaves are not of as bright a green, they presents us with berries for Christmas, and we thus have our true holly berries.

Great disappointment comes to many from not knowing that all hollies are not fertile. Some bear male flowers, others



ILEX CRENATA.

female, and still others perfect ones. Those who plant seedlings run the risk of getting non-fruited kinds. If a grafted plant cannot be obtained, it is better to plant one that has already borne berries. English works refer to budding as being successful as well as grafting. Hollies can be propagated by cuttings made in early winter, and placed in a warm greenhouse. The cuttings should be placed in boxes or pots, where they may remain for a twelve-month without being disturbed. They root in time, but not quickly.

Hollies are best transplanted in spring. They need at the time the closest kind of pruning. A bush with stem an inch thick should be pruned back almost to the main stem. If it has been transplanted often previously, or if but a small bush, less pruning is required. Little or big, however, all the leaves should be cut off in moving. Treated in this way, hollies rarely fail to grow.

Philadelphia. JOSEPH MEEHAN.

THE NORTHERN ASH TREES.

The five species of the ash indigenous to the northern states are all found in this immediate vicinity, and I doubt if this can be said of any other part of the United States. The white, black and green are the most abundant. The western green ash (*Fraxinus viridis*), commonly called the white ash, being found with its eastern relative the true white ash (*F. Americana*). The former thrives better on high land than the latter and is a more rapid grower, but does not attain the size of the white ash. The black ash (*F. sambucifolia*) is the largest of all, and is found only in swamps and along streams.

The red ash (*F. pubescens*) is found at the bottom of ravines alone. Although a very slow grower it makes a fairly large tree, but the branches are more brittle than in any of the others. The blue ash (*F. quadrangulata*) is a very desirable tree. There are very few examples of this species to be found here, but it appears to be as fast a grower as the white ash. The green ash grows on a greater variety of soils than the others, and is the best tree for the west. In fact, the white ash has been a total failure in most places west of Indiana, and I doubt if there is a good specimen on any of our prairies. It is mostly found in ravines or on low lands. I have seen some fairly good specimens on ravine banks, but none on high ground.

In a favorable locality the white ash makes a better street tree than the green, having a head of greater spread, and the leaves have a much brighter color in the autumn than those of the green. The black ash is suitable for low and wet ground only. The red ash will grow on drier ground, but is a rather unsatisfactory tree on account of its very slow growth. As the white ash does not do well in the west, we are left with only two species suitable for general planting. The blue ash is little known and very seldom planted. I am not thoroughly conversant with this tree, but Bryant and others of the early pioneers spoke very highly of it, both for timber and ornament. Take it all in all then, the green ash is the only one suitable for the middle west. It grows rapidly when young, makes a fine ornamental or shade tree and affords excellent timber.

Waukegan, Ill. THOS. H. DOUGLAS.

The next issue of GARDENING will contain several important articles on sweet peas.



PRIZE-WINNER IN LANDSCAPE GARDENING CONTEST.

A LAUDABLE EFFORT.

There was some comment in a recent issue on the good work carried on by the National Cash Register Co., of Dayton, Ohio, in the interest of horticulture, and now we are pleased to be able to present further details of the scheme together with pictures showing some of the results. This company started by employing an eminent landscape gardener to ornament the factory grounds, and this proved so satisfactory that in the summer of 1895 preliminary steps were taken toward the improvement of the surroundings of the workmen's homes in the immediate neighborhood. The company sent out an expert photographer and had every ugly and unsightly spot or feature in that portion of the city photographed. It also took pictures of many of the beautiful and neatly kept homes and cottages. From these collections stereopticon slides were made, and the president of the company then gave a series of free lectures on home improvement and municipal reform, illustrating his remarks by means of the slides already prepared. This movement resulted in the formation of an improvement association.

The aims of this association are so well set forth in the preamble to its constitution that we cannot do better than quote the document in full: "The objects of this association are the beautifying of all streets, unimproved property, parks, etc., by planting trees and flowers and a general promotion of landscape gardening; abating nuisances; promoting the sale of property to desirable people; controlling, so far as possible, the location of houses; construction of sidewalks; securing proper sewerage, surface drainage, etc.; improvement of the schools, and promoting the general welfare of the territory embraced by the association." This it seems to us covers the ground very thoroughly, and should serve as a useful guide to the numerous communities in all sections of the country that need an institution of similar character. It is not to be assumed that to make any real progress in a reformation based on these outlines is an easy task. There are indeed many obstacles to be overcome,

but it may safely be stated that the difficulty hitherto experienced in their removal has been due more to a deficiency of example than to any lack of application on the part of those who have taken similar work in hand. It would seem, therefore, as if a few models of varied character in the immediate vicinity would aid local organizations in bringing about the desired improvement of home and factory grounds, leading in this way to the formation and extension of public parks.

But the work of this improvement association did not end with the publication of the preamble to its constitution, as it does too often end, unfortunately, in like cases. In the spring of 1896, the president of the company announced at one of the meetings of the association that he would give \$50 in gold, to be divided into four prizes, to the four persons having the most tastefully arranged home grounds. This created a lively rivalry and many entered their names for the contest. Late in summer the association appointed an awarding committee the members of which viewed the premises of the competitors, and the company sent its photographer around and photographed the homes and premises of all competitors and then had lantern slides made of them. The winners of the prizes were announced at a meeting of the association by the president of the company, and the points of contrast and the findings of the committee were explained by the chairman of the awarding committee and illustrated by the aid of stereopticon views taken. This, of course, created immense interest and enthusiasm. Lectures on landscape gardening and ornamental planting were given from time to time in one of the churches and in the club hall of the factory, and these also were always illustrated by stereopticon views. So great was the interest that the rooms were crowded to their utmost capacity, and hundreds had to be turned away unable even to get inside the doors.

The results attained in the improved home surroundings and the abatement of nuisances such as unsightly bill boards, high board fences and other things were

so satisfactory that in the spring of 1897 the company announced through the association that it would furnish choice shrubbery and seeds at wholesale prices to all members of the association and employes of the factory, and also that the company would give \$200 in gold divided into four purses as follows: 1. \$50 for the best effects in landscape gardening, as in 1896. 2. \$50 for the best kept street, divided into three prizes. 3. \$50 for the cleanest and best kept back yards, open only to boys and girls, the work to be done by them. 4. \$50 for the best vegetable gardens divided into five prizes open only to boys between the ages of 8 and 15 years. The company also announced that they would plow and harrow a piece of ground and divide it into forty plats 10x130 feet and give it to forty boys to cultivate and furnish them tools and seeds and plants free, also a competent instructor to teach them how to plant and cultivate vegetables—the boys to have and own all they raised and the privilege to compete for the prizes offered above.

The success of this work has been so great that the company has enlarged the prize list for 1898 and offers cash premiums to the value of \$200 for competition under the following heads: "Landscape gardening," "best kept premises," "vine planting," "boys' and girls' prizes," "window box gardening," and the "best vegetable gardens."

Publications.

BOOKS AND BULLETINS.

CATALOGUE OF FRUITS.—By the *American Pomological Society*.—Department of Agriculture, Washington, D. C., 1897. —Notwithstanding some inaccuracies which appear to have crept into the work, more particularly with reference to the fruits of California, this is certainly the most valuable work the department has published in all the years of its existence. The work on this catalogue was begun fifty years ago by the men then interested in American fruit culture, and

the list was first published by the American Pomological Society (then the American Pomological Congress) in its proceedings of 1852. The names of 159 varieties were given in the original list, but this has since been many times revised by the most competent authorities. The present compilation, says Mr. G. B. Brackett in his letter of transmittal, is a revised catalogue of fruits, comprising such varieties as have been found best adapted to the various fruit districts of the country. We may add that the committee of the American Pomological Society charged with the latest revision, which included such fruit experts as T. T. Lyon, L. H. Bailey, Henry L. Lyman, Louis A. Berckmans and C. L. Watrous, is sufficient guarantee that no effort has been spared in making the catalogue as complete as possible. No progressive fruit grower can afford to be without it.

SPRAYING TO PREVENT GOOSEBERRY MILDEW.—By C. P. Close.—New York Experiment Station, Geneva, N. Y., 1897. —For ten years this station has advocated potassium sulphide as the best remedy for gooseberry mildew. During the season of 1897 potassium sulphide, Bordeaux mixture, lysol and formalin were tested side by side, with the result that the station authorities still pin their faith to potassium sulphide (one ounce to three gallons of water) as the most effective fungicide for gooseberry mildew. It is claimed that as a rule only the English varieties and their seedlings are attacked by mildew, although the American varieties are not always exempt.

INSECT LIFE.—By Prof. J. H. Comstock. —D. Appleton & Company, New York, 1897. It is rather unfortunate that the author selected for this work a title previously borne by a publication of seven complete volumes issued in the form of a periodical by the Division of Entomology, U. S. Department of Agriculture. Though the title fits the work admirably, this fact ought to have precluded its adoption in this instance, where an original title might have been just as appropriate and attractive, and certainly would have avoided more or less confusion. This volume of 349 pages contains chapters on Pond Life, Brook Life, Orchard Life,

Forest Life and Roadside Life, besides a chapter devoted to the collection and preservation of specimens. One of the best features of the book is Prof. Comstock's advice about taking notes and labeling specimens. He says: "After many years' experience I am sure that nothing more important can be said to the young student regarding the taking of notes than to urge him to take them at the time the observation is made. If you make an observation in the field do not wait till you return to the study to record it, but write an account of what you have seen immediately, and do this if possible while observing the fact. Almost invariably the writing of an account of an observation will suggest queries, many of which can be answered at the time the observation is made, but not after the observer has returned to his study. * * * Make your record while the occurrence is fresh in your mind, before it loses the charm of novelty and becomes a commonplace. Many an account is very incomplete simply because the writer has become so familiar with certain details that it does not seem to him worth while to record them. * * * In making observations be sure you are right and then look again." As a guide to nature study the work is unsurpassed. Many books have been written that contain popular sketches of insects and among these the writings of the late William Hamilton Gibson occupy a prominent place, but few if any of these writings make any attempt at classifying the subjects of the text further than to give the scientific appellations of the insects. Prof. Comstock's book contains eighty-five pages on the classification of insects, and explains the relationship not only between the different orders of the true insect class, but between this and closely allied classes. Nearly all the illustrations in this work (and there are many) are from wood engravings made by Mrs. Comstock, and they are far better than those found in most works of the kind. The text is written in a pleasant and popular style, and is interspersed with selections from some of our modern nature poets. As a guide to science teaching and nature study, it is one of the very best books that have yet been published. W. E. B.

CATALOGUES RECEIVED.

Henry A. Dreer, Philadelphia, Pa., garden calendar; Ellwanger & Barry, Rochester, N. Y., trees, shrubs and fruits; Spaulding Nursery & Orchard Co., Spaulding, Ill., trees, shrubs and fruits; Storrs & Harrison Co., Painesville, O., seeds and plants; W. B. Cole, Painesville, O., fruits and flowers; Jno. D. Imlay, Zanesville, O., seeds and plants; Nanz & Neuner, Louisville, Ky., seeds and plants; John A. Bruce & Co., Hamilton, Can., seeds; Luther Burbank, Santa Rosa, Cal., fruits and flowers; Lewis Roesch, Fredonia, N. Y., trees, shrubs and fruits; Schlegel & Fottler, Boston, Mass., seeds, plants and bulbs; Dwight Seed Co., Reading, Pa., garden and farm annual; Wm. C. Babcock, Bridgman, Mich., fruits and plants; S. D. Woodruff & Sons, Orange, Conn., seeds; Sunset Seed & Plant Co., San Francisco, Cal., seeds; The Conard & Jones Co., West Grove, Pa., seeds and plants; Wm. Baylor, Hartland, Cork, Ireland, seeds; J. Lambert & Sons, Trier, Prussia, seeds; W. F. Allen, Jr., Salisbury, Md., fruits; Reasoner Bros., Oneco, Florida, plants, trees and shrubs, wholesale and retail; Sander & Co., St. Albans, England, florists' orchids; George C. Watson, Philadelphia, Pa.



A BACKYARD PRIZE-WINNER.

GARDENING

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE CATALOGUES make mention of comparatively few novelties this year—a healthy indication.

PLANT LICE in Maryland caused losses last year to the amount of \$100,000, chiefly in melons.

THE CONSERVATORIES of Washington Park, Chicago, are now lighted by electricity and open to the public every evening.

A FRENCH WRITER refers to our native *Crataegus coccinea* as one of the most ornamental members of its genus, and strongly recommends it as a stock for grafting.

NEW YORK APPLES sold last month in the London markets for eleven shillings and six pence per case; Californians brought from nine to eleven shillings per 40-lb. box, Canadians twenty-three to twenty-eight shillings per barrel. A serious fall in the prices is said to be due to complaints of uneven packing.

FOR A LONG PERIOD much of the perfume sold as the product of the violet, says the *Gardeners' Magazine*, has been derived from quite a different plant, namely, the Florentine iris, and now we have to record as one of the most recent achievements of scientific chemistry, the production of an artificial perfume practically identical with that of violets.

AN ELECTION OF THE BEST fifty Japanese chrysanthemums, conducted by the *Journal of Horticulture* in England, places Edwin Molyneux, Vivian-Morel, Mme.

Carnot, Charles Davis, Charles Tabor, Phœbus and Mons. Chenon de Leche at the head of the list with thirty-two votes each. The American varieties Simplicity and Mutual Friend follow close upon the leaders with thirty votes each. Modesto has twenty-seven votes, Western King twenty-one, Col. W. B. Smith fourteen, and Sunstone and Niveus are at the bottom with twelve each.

AN INTERESTING STUDY in Japan is the growing of mushrooms in the Shikoku Islands, where most of the camphor is produced. Of the numerous species of edible mushroom, an English traveler writes, the one called Shutake is the most important, being abundantly exported abroad, and also used for many culinary purposes at home. Logs which are used for cultivating this mushroom are of various species of oak. Oak trees 25 to 33 years old are felled in the autumn, and incisions made with axes at intervals of three or four inches, the incisions generally reaching the woody layer. The trees are then cut into logs of four to five feet in length, and left in dark, secluded parts of the forest. After the third year mushrooms make their appearance in the incised portions. When the growth lessens they are replaced by new logs. After being collected the mushrooms are dried either by the sun or by artificial heat.

THE GYPSY MOTH which has caused so much trouble in the woodlands of Massachusetts, has not yet been banished; but Dr. L. O. Howard, who was appointed by the United States Agricultural Department to investigate the work done by the Massachusetts authorities, reports favorably thereon. "At the present time," he says, "there can be little doubt that the extermination of the insect is possible, and that it will be a question of only a few years if adequate state appropriations are continued. The pest has unquestionably been exterminated over considerable stretches of territory, and what can be done for one section like this can be done for all if the means be sufficient. The question as to whether the money has been used in the best possible way to forward the end desired may be answered both emphatically and in the affirmative."

THE GERMANS ARE MAKING strong efforts to exclude American fruits from their markets, and the reason given is that some shipments of American apples, coming from California, have been described as affected by the San Jose scale, but just how German apples are endangered even if this fact should be established, is not made plain. One of the standing complaints against American dried fruit, the trade in which with Germany has assumed enormous proportions, is again brought to official notice by a report of complaints to the state department from United States Consul Ozmun at Stuttgart, and is made public in the daily consular reports. He transmits a notice issued by the chief of police at Stuttgart to the effect that most of the samples of American or dried apples taken from the local retailers show the addition of metallic zinc in quantities of 0.3 grams to the kilogram (2.6246 pounds), and warning all dealers that they will be punished and their goods confiscated if further sales of such goods are made. This complaint was made to the department first about two years ago, the German chief of police in Cologne asserting in his notice that the zinc was present in the apples because "the Americans dry the fruit on zinc trays, instead of wooden bars as we do." Immediately

one of the most enterprising of our consuls in Germany visited an agricultural exposition then going on in Germany and reported that all of the fruit evaporators exhibited, about fourteen in number, were fitted with the alleged harmful zinc trays, which were freely used in Germany. It would seem that the full details are not yet obtainable in Berlin, but it is expected that our representative will cable the entire decree as soon as he can obtain possession of it. The important facts established by the last advices were, first, that the decree of exclusion uses the word "American" as descriptive of the place of origin of the fruit and includes in the prohibition all dried fruits from America. The state department officials at Washington have not yet recovered from their surprise at the method adopted by the German government of accomplishing its object in this matter, and undoubtedly the correspondence to follow will set this out very clearly. The objection to the course pursued is three-fold. In the first place, it is said to be entirely without precedent and discourteous toward the American representative at Berlin to make the decree and put it into effect without the slightest warning to him. In the second place, by making the decree take effect at once and stopping all fruit in transit, a great injustice is done to shippers who thus without warning are made to lose heavily on their capital invested in the fruit. Thus the decree is condemned, in that it makes no provision for the admission of fruit of absolute purity, permits no demonstration of origin or healthful condition, and in fact condemns all fruit, good and bad alike. These conditions are to be strongly urged upon the German government as reasons on which the decree should be revoked or modified. Among the fruit exporters in San Francisco, the news of the action of the German government prohibiting the importation of American fruit has created no alarm. Albert Castle, of Castle Bros., voices the general sentiment in the statement that at present the market in Germany for California's fresh fruits was not of sufficient importance to justify alarm. Joseph A. Filcher, secretary of the State Board of Trade, said: "I believe that Germany's action is in retaliation for the sugar tariff of the Dingley bill. It will not affect California much, as we export only small quantities of fresh fruits to that country. Of course, an expansion of prohibition to dried fruit would concern us mightily."

RELATION OF OUR PUBLIC SCHOOLS TO HORTICULTURE.

Mr. George T. Powell, of Ghent, N. Y., delivered the following address on this topic at the recent annual meeting of the Western New York Horticultural Society:

With the rapid growth of our population, the great extension of orchards and vineyards, and the close competition we have to meet in our markets from both domestic and foreign fruits, we need every possible aid that can be brought to this industry in our state, and the relation of the public schools to horticultural interests becomes an important subject for consideration.

The tendency of population to concentrate in cities during the last half century has been marked, and the growth of cities during the past thirty years has been phenomenal. From 1790 to 1880 the population of this country increased twelve times, while that of cities of over 8,000 inhabitants increased eighty-six times. In the past one hundred years the

population of New York has increased seventeen times, while that of New York city has increased forty-six times. From 1870 to 1890 the increase in population in New York state was 1,610,000 while the increase in value of real property was \$1,659,000,000. In 1869 the value of our farm products was \$253,000,000. Twenty years later it had fallen in value to \$161,593,000, while the farming land of the state has depreciated 50%.

These facts present some serious problems for the producers of fruit and farm products. The growth of cities ought naturally to be of great benefit to those who grow food products, but unfortunately in this rapid growth of our cities there is a very large increase of the non-earning and dependent class, filled from the ranks of the unemployed. It is stated by the Bureau of Labor that 40% of those engaged in the organized trades of our state are unemployed, and this is undoubtedly true in most of the large cities of our country. This large army of the unemployed in our cities, supported by charity, are not consumers of our fruits, and before we can again find ready sale for the products of our orchards and vineyards at anything like remunerative prices, the problem must be solved of the employment and opportunity to earn a living by this large unemployed class in our cities.

In this drift of population to cities, our rural schools have suffered. We have to-day in New York 3,000 schools with an average attendance of less than ten children. We are paying \$300,000 for teachers in these schools, making the cost for each child \$20 a year beside the local expenses. Is there any wonder that the persons living in such communities want to get away from them, and from the farms, when their children can not have the advantages that the better schools of the towns and cities furnish? We greatly need a consolidation of these weak schools and more of central high schools, that the children of the country may have equal educational advantages. In these schools should be taught the natural sciences, applied to agriculture in easy nature lessons. This line of instruction is being inaugurated, happily, in the schools of our state to-day.

During 1896 a committee known as the "Committee for the Promotion of Agriculture" was organized in New York city by prominent persons anxious to build up the rural interests of the state, and thereby relieve cities of their congested population. This committee instituted a line of nature study lectures to be given in the public schools of Westchester county, covering such subjects as soils, plants, animals and insects. The work proved so successful that a large demand arose for it, and Cornell University was urged to take it up under what is known as the Nixon work, and it is now by Cornell actively pursued in some parts of the state. Within a few months we have met over 30,000 of the school children of the state to whom lectures have been given on plant and insect life, and the teachers were instructed on how to present these topics.

Cornell has also sent regular instructors to teachers' institutes, where the teachers received most valuable information, to enable them to introduce nature topics in simple lessons in their schools, and as far as possible from natural objects rather than from books. In the inauguration of this public school work by the New York committee, an elaborate experiment was tried to test the interest school children might have in the study

of plants. An offer was made to all children who would apply for them to send them a half dozen strawberry plants, and they were to plant, care for, study about and write compositions for the school upon what they learned from these plants. The interest spread over the entire state and over 10,000 plants were sent to children who applied for them.

With this kind of instruction given in our schools, a new ardor would be awakened and a new appreciation of country life would come to many who now have no desire to live in the country. A class of boys and girls on leaving such schools would take up their work on the farm with a greater knowledge and intelligence in relation to plants and insects that would help them in every way. We should not teach of insects so much from the standpoint of their destructive influence, but rather from the broader thought of insect life where their interesting habits may be known, and also their usefulness as friends in the general economy of nature.

With this system of education carried out in all schools in cities as in the country, there will come in time a change in the tendency of so many to drift into the hard lines of city living. There will be a new life and interest in the farm; there will be greater skill in handling the soil, trees, vines and plants. The domestic animals will be improved more rapidly and with their improved products will come larger incomes. But above all of these will come that intellectual uplift which is the great need of the life upon the farm to-day.

This is possible through our public schools, and the improvement we so much desire to realize in business and in the best interests of society can be realized sooner through this channel than by any other.

WAUPACA HORTICULTURAL SOCIETY.—At the annual meeting held at the house of S. S. Chandler, Tuesday, January 18, the following officers were chosen: President, E. L. Demarest; vice-president, M. Hayward; secretary, H. Burnham; treasurer, W. D. B. McIntire; delegate to Madison, S. S. Chandler, Jr.; alternate, W. J. Bendixen.

PENNSYLVANIA STATE HORTICULTURAL SOCIETY.—At the annual meeting of this society held in January the general fruit committee made a remarkably full report based upon circular letters sent to every corner of the state, and the replies to the same. These replies showed apples to have been a light crop in almost every section by reason of the early drought and humidity at time of ripening. Pears were below the average in quantity, but the fruit was marketed in good condition, and better prices were realized than in preceding years. Peaches were a heavy crop of undersized fruit. Plums, owing to the introduction of the Japanese varieties, and the satisfaction there is with them gave promise of being one of the crops of the state. In some localities cherries were a failure, while in others the yield was heavy. The quince yield was fair. Grapes were below the average. Potatoes, as a rule, were a short crop. The increased interest in ornamental trees and shrubs and in home adornment was noted. One reason for this was found in the good example set by the great railroad companies of the commonwealth in the efforts made to beautify the grounds about their stations, this having a marked influence upon the taste of the people and leading them to pay more attention to their home surroundings.



J. W. BARNETT.

WORKERS IN HORTICULTURE. III.

Attention has been drawn to the Texas State Floral Society by the remarkable progress it has made in a comparatively brief period. Organized as the Waco Floral Society in 1896, the first exhibition was held in May of that year, a chrysanthemum show following in November. Last December the scope of the society was enlarged to cover the entire state, and the title was changed accordingly. The society will issue an advance premium list shortly, offering cash prizes to the amount of \$750. This is certainly an excellent showing, and foremost among those responsible for it is the president, Mr. J. W. Barnett, whose portrait is herewith reproduced. Mr. Barnett is a native of Texas, born in 1855 and educated in the country schools. He has always taken a warm interest in the promotion of floriculture in his native state, and although engaged in the wholesale grocery business during the past twenty years, he has found leisure for much floricultural work of the most effective character. His labor of love, together with that of his associates, merits the highest reward, and we wish them all success.

Fruits and Vegetables.

TOMATOES UNDER GLASS.

So much has been written on this subject of late that perhaps I should apologize for giving expression to a thought or two at this time. But I have grown this crop for many years with such unvarying success that I feel a word may not be inopportune, especially as many growers are now actively engaged in the incidental work. Most writers I find complain of their lack of success in setting the fruits, and some advise the use of bees for this purpose, while others assert that these are not necessary. I certainly agree with the latter, for I have never employed bees in the tomato houses and I have not yet failed to produce a crop.

I believe a large proportion of the failures are due to benching before the plants have become root-bound in the pots, two

much root room in the benches, or an over rich soil. It is best to bench the plants after they have been a little stunted in pots, at least that has been my experience. Sowing the seeds in pans or boxes, the seedlings are first potted off in 2-inch and potted on as necessary to keep them growing in the 4-inch and 6-inch sizes. In the latter they are allowed to remain until the fruits begin to set, and then the plants are transferred to benches of just sufficient depth to take the ball of roots and soil. If planted in solid beds, the soil should be rather poor in character, but in all cases I prefer the shallow benches. Apply water with care, for in dull winter weather it is frequently difficult to get the soil dried out again.

The only effort made in the direction of artificial pollinization consists of giving the plants, individually, a sharp knock occasionally at mid-day when the pollen is dry in bright weather. Water may be given more freely when the fruits are set in sufficient quantity, and feeding in solid or liquid form will then be advantageous. To those who find it difficult to set a crop of fruit I would say start the plants early so as to have some fruit set before the darkest days come on. Another plan which I have found to work well, though applicable to a private garden rather than a commercial establishment, is to move the plants from 6-inch pots to the 8-inch size and plunge them in beds, giving the roots full freedom as to spreading through the surrounding soil. There is little difficulty about getting plenty of fruits in this way, but sometimes they come rather small. I have found Early Ruby and Lorillard to be the best varieties for greenhouse work.

JAMES SCOTT.

NUTS AND NUT CULTURE.

At a recent meeting of the Massachusetts Horticultural Society, Mr. Frank M. Bartram spoke on this subject as follows:

In 1897 the United States imported more than \$2,200,000 worth of nuts, and when we consider that most of this was for kinds that may be easily raised within our own borders, it does not speak well for our boasted enterprise. It seems incongruous to say so much of opening up and fostering markets abroad for the agricultural products of the United States when we ignore the expenditure of our own people going to foreign purses. It is the varieties of nuts that enter most largely into United States commerce and consumption that we will consider here—those whose culture has already become a reality in some parts of the country.

The industry is comparatively young; it is scarcely thirty years since nut culture assumed commercial importance. The almond and Persian walnut in California, and the pecan in the South, are in the advance of the movement. Much interest is taken in chestnuts throughout the Atlantic States.

The claims of desirability of nut culture are numerous. Trucking requires ground of great fertility and suitable for high culture; nut trees are not fastidious, and hillsides are often their home. Truck must be planted annually, while a nut orchard might almost sing with Tennyson, "Men may come and men may go, but I go on forever." Nuts are not perishable; they may be stored and marketed at one's pleasure or need. They are a concentrated product, lessening the proportion of freight charges. Not requiring constant and detailed attention, they will appeal to the large planter, while on the other hand, these virtues will suggest

nut culture as a side issue, for on many farms land is found, now unremunerative, admirably suited to nut trees, especially hillsides, and here the forester's attention will be arrested.

We are aware of the benefits of forests, principally in moderating extremes of flood or drought, and many kinds of nut trees are adapted to forest planting, and their timber is highly esteemed, for example, oak, beech, chestnut, hickory, walnut, and even the hazel bush finds a place as a pioneer in soils too barren for other trees, and by rapidly adding organic matter in the abundant crop of leaves, prepares the way for the more valuable timber trees.

The ornamental value of certain nut trees is so far beyond question that thoughtlessness and custom alone must be held responsible for depriving us of so much possible enjoyment of beautiful trees. The area about many suburban homes is limited; why not plant a chestnut or a hickory, instead of choice trees which bear only leaves, and get a tree of good appearance, whose fruit will be a source of continual pleasure to young and old.

Foremost in acreage, value and ease of bud propagation, among American-grown nuts, is the almond, and American-grown almonds are foremost in the world as regards flavor. California is the main field of production.

Next to the almond stands the Persian walnut; its place of origin is Persia, but it received the name in England, and in America we call it the English walnut, though the appropriate appellation Persian walnut is becoming more common. The rich, moist valleys of Southern California, with steady supply of water, have claimed a monopoly of this crop. The selection of varieties whose buds start late in the spring is increasing the area for profitable planting of this walnut. The trees begin profitable bearing at the age of nine or ten years, and no one knows how long they continue to do so. There are several distinct strains grown, some of which are of French origin. The Chili walnut comes from South America, and has three divisions to the shell instead of the usual two of European strains. Outside California the Persian walnut is rare, except along the Atlantic coast between New Jersey and Carolina. It may be found as far north as Massachusetts, where its stateliness, beauty, freedom from disease and insect pests, I heartily recommend it as an ornamental tree, and its product will be much enjoyed at home. Disappointment has often resulted from a lack of pollen caused by a lack of simultaneous blooming of pistillate and staminate flowers; a remedy for this will be found in the planting together of suitable varieties.

The Pacific coast black walnut is very precocious in Philadelphia, where an eight-foot tree bore fifty nuts, though no other tree was near it. The American black walnut has been much gathered in the East for home cheer, and sold in considerable quantities. The only reason for prizing these nuts that I can see is custom. The sound trees furnish timber of great value.

The white walnut, or butternut, thrives in drier and poorer soil than the black walnut, and further north the kernels find a place in confectionery, but are hard to separate from the shell, and the wood is not nearly as valuable for timber purposes as is the black.

Three Eastern Asiatic walnuts, called *Juglans Sieboldiana*, *J. cordiformis*, and *J. Manchurica* resemble the butternut. *J. cordiformis*, from Japan, is by far the

most valuable of the three. The nut is pointed, heart-shaped, smooth and flat, and a single tap separates the shell into halves. The kernels are of good quality and already prized by confectioners. The trees bear very young and are perfectly hardy.

The pecan is cultivated along the Mississippi and its tributaries, as far as Iowa and Ohio. Here, in the alluvial bottom lands, are the headquarters of pecan culture of the world, which seem destined to maintain this prestige. Florida and California also tell of successful cultivation of the pecan. Closely allied to the pecan botanically is the hickory nut or shell-bark. The trees are desirable for lawn and roadside planting, the nuts are salable, and the timber is valuable.

From a commercial standpoint the chestnut, for this vicinity, seems to me by far the most promising of nuts. We know the tree thrives and bears here, which are important factors already established. The market takes all the American chestnuts, and many thousand pounds besides which are imported from Italy and France. They are mostly sold along the streets, much as peanuts are. Consider the vast increase possible in this line, and the far greater demand when they become as frequently used for deserts and relishes as their merits deserve. Mark the frequency with which the chestnut appears in newer cookbooks for stuffings, dressings, etc., and remember that chestnuts, are even now found with vegetables upon that class of American tables that soon have innumerable imitators; and prepare for this demand, which is small, indeed, compared with the possible and probable consumption when chestnuts are dried, ground into flour, and become the staple article of diet that they have so long been in Southern Europe. Not only chemistry, but the experience of generations, has demonstrated the fitness of chestnut meal for human food.

Chestnut trees do best on high, well-drained land with open sub-soil; such hillsides as abound in New England. Stony land is no objection; chestnuts do not bruise in falling as plums would. Once established, a chestnut orchard continues in profit for decades or even centuries. No protection and very little pruning are required. No large fertilizer bills encroach upon profits; their roots go deep into the ground and get fertility far below the reach of annual crops. An established chestnut orchard will yield as many bushels per acre as corn, and with little more than the expense of gathering. Chestnuts brought \$14 per bushel at the first of last season for the best sorts. These fell as the season advanced to \$12 and \$10, and to \$7 and \$8 for poorer sorts. If farmers should get such prices for corn they would raise nothing else, one would think.

Chestnuts do not require constant attention and the gathering can be done by cheap labor. They are not perishable and can be stored or sent great distances to get a good market price. Chestnuts do not need expensive packing boxes.

There are three distinct strains of chestnuts, the American, European and Japan. The American nuts are small, usually fuzzy, and of the best quality. The European trees have given us a strain of very popular chestnuts, including Paragon, Ridgely, Scott and a host of other good kinds. In Japan there are three kinds; the largest and best is being planted here; the choicest seedlings are named and are propagated by grafting. The trees bear when very young and are good producers of nuts of the largest size, although not

The hazelnut is common in the United States but has not yet submitted kindly to culture. The cocoanut is the fruit of a stately palm. Some trees are said to bear as many as three hundred nuts. The area suitable to its successful culture in the United States is small, being confined to parts of Florida.

Many are deterred from embarking in nut culture because they think they have to wait too long for returns, but the fact is they do not have long to wait.

In conclusion, let me call attention again to the timber value of nut-bearing trees. I am still more anxious that their ornamental properties be remembered, and especially by the owner of a home with but limited surroundings. Let him who feels that much of his earnings must be sacrificed upon the altar of utility not forget that there are trees as handsome as any, that will yield each year a product desirable at home or salable anywhere.

Let me recommend nut culture to the farmer who would increase his income. No one need be deterred because he has no large acreage to devote to nut orchards alone. There is surely room for that tree which, while crowding out nothing useful, will be an enduring source of satisfaction.

THE QUINCE.

It has been my lot to have been cast among quinces from the time of my earliest recollection, and consequently I have had much experience in their culture and management. Early in life I lived where lakes, ponds and running streams were numerous, and the borders of these (to render them more slightly) were planted with almost anything, quinces among the rest. The trees were planted high on the banks, with their tops leaning over the water. In this position they grew luxuriantly, and bore regularly heavy crops of the finest fruit, all of which had to be gathered from boats or rafts.

Quinces planted in the ordinary orcharding way are reported not to be a success in many parts of the country; but I have practiced the above method in many different localities, and, having always found the results satisfactory, can not too strongly recommend it. The quince in this locality is a fruit always scarce and high in price, and the man down here who has a bushel counts them simply as so much money in his pocket. With us they are not known at all in commerce.

Tennessee.

S. W. T.

NOVA SCOTIA FRUIT GROWERS.

The thirty-fourth annual meeting of the Nova Scotia Fruit Growers' Association, held in Wolfville, on January 26, 27 and 28, was largely attended by representatives from all parts of the province. As in almost every other meeting of horticulturalists in America this year, the San Jose scale was the all absorbing topic of discussion. As yet the scale is not known to be in the province, but the fact that it has, within the last year, been found in Ontario and that of late years a large amount of nursery stock has been imported from parts of the United States and Canada known to be infested with the scale make the fruit growers apprehensive lest it may have already gained a foothold here. The general opinion in the meeting was that rigid inspection should be given to all stock imported this year as well as to those plantations which

have been set within the last few years. A discussion on the marketing of apples in England brought out many valuable suggestions. Mr. John E. Starr, appointed by the Dominion government to investigate this subject gave it as his opinion that the greatest difficulty to be overcome by the shippers of fruit was lack of ventilation in the hold of the ship while crossing the ocean. He stated that apples shipped to England during October and stowed in the ship so as to allow good ventilation arrived in perfect condition while later shipments which were packed more closely on account of greater demand for space in the ship, were materially injured by heating. The value of irrigation, even in the comparatively moist climate of Nova Scotia was shown by the experience of Mr. Henry Shaw. He has irrigated for two years past, principally on apples and plums. The first year, 1896, he raised a full crop as did his neighbors who did not irrigate. The past season trees which had been well watered the previous year gave another full crop; those which had received a small amount of water gave a half crop while trees in parts of the same orchard not reached by the water gave practically no fruit at all. The prospect for next year shows similar differences, though after a year of rest, the trees which have received no water give promise of a considerable amount of fruit. Other important subjects discussed were "Cranberry Culture," "Spraying," "The Black-Knot," and "Cold Storage." The following officers were elected: J. W. Bigelow, president; Peter Innes, vice-president; S. C. Parker, secretary; and Geo. Munro, treasurer.

F. C. SEARS.

Societies.

OMRO HORTICULTURAL SOCIETY.—The names of the officers elected January 14 are as follows: L. F. Laiten, president; Thomas Tanner, vice-president; Mrs. J. D. Treleven, secretary; Mrs. S. O. Pingry, treasurer; S. Pingry, Edith Treleven, Mrs. S. Z. Carver and O. W. Babcock, executive committee.

HORTICULTURAL SOCIETY OF WINDSOR, WALKERVILLE AND SANDWICH.—The following officers were elected at the annual meeting: President, S. Lusted; first vice-president, Chief Willis; second vice-president, D. Grieve; treasurer, A. W. Joyce; secretary, F. P. Gavin; directors, L. Montreil, A. W. Joyce, F. P. Gavin, A. Turner, Mrs. Weldrick, Mrs. Paddon, S. Lusted and Chief Willis.

STARK COUNTY HORTICULTURAL SOCIETY.—A very pleasant and profitable meeting was held on Wednesday, January 19, at the home of Superintendent and Mrs. A. R. Hanna, of the Charity Rotch school. Papers were read by Mrs. Rev. Clokey on "Flowers and What They Teach Us," and N. E. Moffet on "The Best Mulching for Orchards." C. W. Faust showed a splendid collection of cut flowers.

WARREN COUNTY HORTICULTURAL SOCIETY.—According to announcement this society met in the mayor's office January 13, to begin a series of meetings for the year. The meeting was called to order by President J. T. Mardis. A paper was read by Miss Hizer on "What Way do Horticultural Societies Benefit City Residents." The next meeting will be held on the second Thursday in March, in the mayor's office with Dr. G. D. Lind as essayist.

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NEW HAMPSHIRE HORTICULTURAL SOCIETY.—There was a large attendance at the annual meeting held January 18, at the rooms of the state board of agriculture, in the state library building. The executive committee was instructed to prepare a brochure, dealing with fruit culture, and especially the grafting and setting out of fruit trees, in such a manner as to interest the young, for distribution among the subordinate granges of the state. The following officers were elected: President, C. C. Shaw, Milford; vice-president, J. M. Farr, Littleton; secretary, W. D. Baker, Quincy; treasurer, T. E. Hunt, Lakeport; board of directors, G. F. Beede of Fremont, J. M. Hayes of Dover, G. S. Smith of Meredith, Charles A. Parrish of Wolfeborough, J. T. Harvey, of Pittsfield, E. M. Shaw of Nashua, Fred C. Gowing of Dublin, Charles McDaniel of West Springfield, T. S. Pulsifer of Campton, and J. D. Howe of Lancaster; executive committee, J. C. Harvey, J. D. Howe, Adam Dickey, Manchester.

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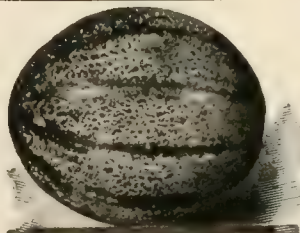
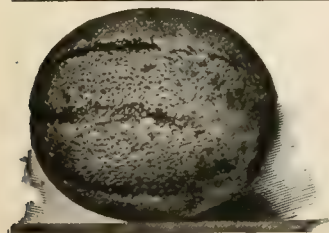
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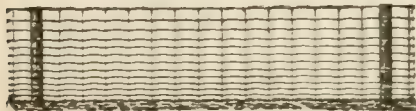
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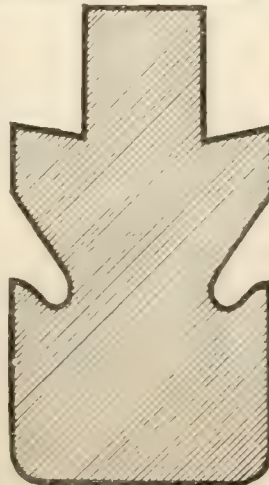
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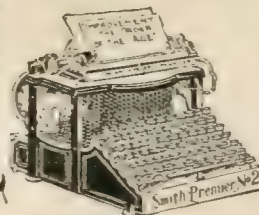
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Vol. VI.

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24 NUMBERS.

CHICAGO, MARCH 1, 1898.

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No. 132.



AMERICAN CARNATION SOCIETY'S EXHIBITION

Carnations.

SEVENTH ANNUAL CONVENTION OF THE AMERICAN CARNATION SOCIETY.

The seventh annual convention of the American Carnation Society was held in Chicago February 17 and 18, and notwithstanding the predictions to the effect that the 1898 gathering of carnation growers would be a small one, the men interested in the work of the society began to arrive early, and before noon of the first day a thoroughly representative meeting was assured. With few exceptions all the prominent authorities on

carnation matters attended in person, and most of the others had able advocates on hand.

The exhibition hall presented the usual scene of activity on the morning of the opening day, but although cases of flowers from Massachusetts were strewn freely among cases from California, Ohio, Indiana, Pennsylvania and other states, there was nothing approaching confusion and in the course of a few hours the exhibits were ready for the judges. The display was fully as extensive as any the society has had, and the blooms of far higher quality than those seen at earlier exhibitions.

The improvement was particularly

noticeable in the stems, which in the case of such varieties as Mayor Pingree, Mrs. McBurney and Jubilee apparently left little to be desired in this respect. The flowers were larger and purer in color; but while solid progress is evident here, the improvement has not kept pace with that of the stems. It will be obvious from this—from the fact that stems of the right character are no longer among the impossible things—that greater attention must now be given to the development of size, color and form in the flowers.

Perhaps the most extraordinary feature of this exhibition was the arrival of a large case of blooms in excellent condition from John H. Sievers, of San Francisco,



CARNATION HANNA HOBART.

This was consigned through J. C. Vaughan, of this city, and on investigation we found that special effort had been made to insure the arrival of these flowers in the superior condition in which they were staged. The flowers were packed in a large case February 13, the stems being immersed in tubes fourteen inches high, two inches in diameter and made fast to the bottom of the case. The tubes, of course, were filled with water, and packed in such manner with moss and the stems of the carnations that the water could not escape to any considerable extent.

Not only did these flowers arrive in good condition on the opening day of the exhibition (the fourth day after packing), but some samples of Hanna Hobart, among the dozen or more seedlings represented in the collection, had flowers of a deep pink shade and larger and finer than anything we remember to have seen in the way of winter flowering carnations.

AWARDS.

The judges report that there was no entry for the Breitmeyer prize for 100 blooms of Mayor Pingree.

The Breitmeyer prize for fifty blooms of Mayor Pingree was awarded to W. N. Rudd, Mt. Greenwood, Ill.

Breitmeyer prize for twelve blooms of Mayor Pingree—W. N. Rudd.

Hill prize for 100 blooms of Flora Hill—1st, W. N. Rudd; 2nd, Wm. P. Craig, Philadelphia, Pa.

Prize for 100 blooms of Triumph—H. Weber & Sons, Oakland, Md.

Cottage Gardens cup for the best yellow or yellow variegated seedling not yet distributed—F. Dorner & Sons Co.

In the preliminary certificate class, Peter Fisher, Montvale, Mass., was granted a certificate for Mrs. Thomas Lawson, scoring eighty-five points.

Jos. Tailby, Wellesley, Mass., scored sixty-eight points with Wellesley.

E. G. Hill & Co., Richmond, Ind., scored with several varieties as follows: America, eighty points; Arbutus, eighty points;

Scarlet Queen, eighty points; Prima Donna, seventy-three points.

In the three year seedling certificate class Frank Niquet, Patchogue, N. Y., scored eighty points with Maud Adams.

Wm. Swayne, Kennett Square, Pa., secured a certificate with Empress, scoring ninety-six points.

R. Witterstaetter, Sedamsville, O., likewise won a certificate with Evelina, ninety-four points.

W. J. Vesey, Fort Wayne, Ind., scored eighty points with Fort Wayne.

Stollery Bros., Chicago, were awarded ninety-one points and a certificate for Argyle.

Dorner & Sons Co., Lafayette, Ind., were given a certificate for G. H. Crane, scoring ninety-two points.

So far as the above seedling classes are concerned, it should be remembered that certificates are given only to such varieties as secure eighty-five or more points, and in the case of Maud Adams no plant was exhibited as required by the regulations for 3-year old seedlings.

Vase 100 white, 1st, E. G. Hill & Co., Flora Hill; 2nd, Dorner & Sons Co., White Cloud.

Vase 100 light pink, 1st, W. N. Rudd, Mrs. McBurney; 2nd, Weber & Sons, Mrs. McBurney.

Vase 100 scarlet, 1st, E. G. Hill & Co., Jubilee; 2nd, W. N. Rudd, Jubilee.

Vase 100 yellow variegated, 1st, W. N. Rudd, Mayor Pingree; 2nd, Dorner & Sons Co., Gold Nugget.

Vase 100 crimson, 1st, Breitmeyer & Sons, Meteor.

Vase of 100 white variegated, 1st, Dorner & Sons Co., Mrs. G. M. Bradt.

Vase 100 Lily Dean, 1st, Wm. P. Craig.

Vase 100 Armazindy, 1st, Wietor Bros., Chicago.

Vase fifty Alaska, 1st, South Park Floral Co., Chicago.

Vase fifty any other white, E. G. Hill & Co., Flora Hill.

Vase fifty Hector, 1st, H. Weber & Sons.

Vase fifty Jubilee, 1st, Wm. P. Craig.

Vase fifty Portia, 1st, Wm. Murphy.

Vase fifty scarlet, 1st, Dorner & Sons Co., Dazzle.

Vase fifty Tidal Wave, 1st, H. N. Higginbotham.

Vase fifty Scotts, 1st, Weber & Sons.

Vase fifty Daybreaks, 1st, Weber & Sons.

Vase fifty any other pink, lighter than Scott, 1st, South Park Floral Co., Albertini.

Vase fifty Armazindy, 1st, E. G. Hill & Co.

Vase fifty Helen Keller, 1st, South Park Floral Co.

Vase fifty Eldorado, 1st, Weber & Sons.

Vase fifty any other yellow, 1st, Weber & Sons, Buttercup.

Vase twenty-five best blooms of pink, lighter than Scott into 1897, 1st, W. N. Rudd, Mrs. McBurney.

Vase best any other color, 1st, Fred Dorner & Sons Co., Mrs. Geo. M. Bradt.

DETAILS OF THE CERTIFICATE SCORES.

The following table gives in detail the points awarded the different varieties in the competition for certificates.

Every variety in the preliminary certificate classes scoring seventy-five points, or more, received a certificate, as there were no plants required in these classes, although ten points on plant were allowed in the scale.

In the three-year class it was unfortunate that Mr. Niquet failed to stage a plant of the variety Maud Adams, as he lost all of the ten points by doing so.

PRELIMINARY CLASS, POSSIBLE 90.

Variety	Color	Size	Calyx	Stem	Substance	Form	Fragrance	Exhibitor
*Mrs. T. Lawson.	15	15	15	15	10	10	5 85	Fisher
Wellesley.....	10	10	15	12	8	8	5 68	Tailby
*America.....	12	14	15	13	9	8	9 80	Hill
*Arbutus.....	15	14	15	14	9	8	5 80	Hill
*Scarlet Queen....	15	15	12	13	10	10	5 80	Hill
Prima Donna.....	15	13	14	10	8	8	5 73	Hill

THREE YEAR CLASS, POSSIBLE 100.

Variety	Color	Size	Calyx	Stem	Substance	Form	Fragrance	Plant	Exhibitor
Maud Adams	14	12	14	13	10	10	7 B	80	Niquet
*Empress....	15	15	13	15	10	10	8 96		Swayne
*Evelina.....	15	15	14	15	10	10	5 10 94		Witterstaetter
Fort Wayne.....	12	13	14	13	8	10	4 6 80		Vesey
*Argyle.....	15	14	14	14	10	9	5 10 91		Stollery
*G. H. Crane.....	13	15	15	15	10	10	5 9 92		Dorner

B. No plant exhibited. *Certificate.

LATE AWARDS.

A delayed package of carnations, from Geo. A. Rackham, Detroit, Mich., reached the exhibition hall on the closing day (Friday), and the judges awarded second prizes for fifty blooms of Wm. Scott and fifty Alaska.

NOMENCLATURE.

MR. PRESIDENT AND GENTLEMEN OF THE AMERICAN CARNATION SOCIETY:

In the list marked "Standard Varieties" I have left out all varieties not supposed to be grown any longer. In revising this list I have been assisted by the following gentlemen: Geo. Payer, H. Weber & Son, Jas. G. Hancock, Peter Fisher, E. H. Michel, John Hart, Jr., Theo. F. Beckert, C. W. Ward, E. G. Gillett, W. N. Rudd, Richard Witterstaetter, Geo. Smith, C. E. Field, W. R. Shelmire, Daniel B. Long,

Eugene Dailedouze, Elmer D. Smith, John G. Esler and Wm. Scott.

It will be seen that the list of assistants comprises growers from all sections of the country, and with a revision by a committee appointed at this meeting the standard list should be final. The society has spent considerable money, and your secretary some \$50 of his own money, in trying to straighten out and reduce the list to something like common sense.

The list marked "Varieties of 1896, '97 and '98" is of too recent registration to eliminate any names without the consent of the parties having registered them. So all names registered within the last three years have been kept intact.

There are numerous unregistered names given each year, and this gives rise to a possible duplication of names regardless of the fact that the society is trying to avoid this very thing. Some claim that the \$1 charge has this effect, but the past experience of your secretary leads him to think that this is not the case.

Something should be done, however, so that all the carnations put on the market at least should be registered and a duplication of the names of popular varieties made impossible. ALBERT M. HERR.

REGISTERED 1897 AND 1898.

Aiba Superba—By John Burton Chestnut Hill, Pa. Color pure white, strong grower, very stiff stem and good calyx, free bloomer.

Bird-in-hand—By Elmer Weaver, Bird-in-hand, Pa. Color white with carmine markings; plant healthy, free blooming, stiff stem and good calyx. Conch Shell—By H. Grout, Springfield, Mass. Color shell pink, vigorous grower, constant bloomer.

Emiline—By W. R. Shelmitre, Avondale, Pa. Color dark pink with purplish cast, very large flower, long stemmed. Edna Craig crossed with Caesar.

Ethel Ward—By The Cottage Gardens, Queens, N. Y. Color pure clear bright flesh pink, seedling crosses.

Firefly—By Geo. Hancock & Son, Grand Haven, Mich. Color scarlet, free bloomer, remarkably healthy, habit not unlike Scott.

Genesee—By Harmon & Burr, Sawens, N. Y. Color white, cross between Daybreak and McGowan.

Gen. Maceo—By The Cottage Gardens, Queens, N. Y. Color deep scarlet, maroon shading. Meteor crossed with Winter Cheer.

Gen. Maximo Gomez—By The Cottage Gardens, Queens, N. Y. Color bright cardinal crimson. From seedling crimson.

Gold Coin—By Geo. Hancock & Son, Grand Haven, Mich. Color yellow, stiff stem, fair size.

Gold Nugget—By F. Dörner, Sons & Company, Lafayette, Ind. Color deep yellow, slightly marked with red, constant and free bloomer, strong grower, stem long and stiff, calyx good.

Happy Day—By Albert Hake, Manchester, Pa. Color bright pink, large flower, good stem, free bloomer.

Mary A. Wood—By F. Dörner, Sons & Company, Lafayette, Ind. Color white, shown as No. 67 at Cincinnati.

Maud Adams—By Frank Niquet, Patehoque, N. Y. Color carmine shaded scarlet, a bright telling variety.

New York—By The Cottage Gardens, Queens, N. Y. Color bright cerise pink, free and early bloomer, habit similar to Scott, good fragrance, Scott crossed with Daybreak.

Progress—By W. R. Shelmitre, Avondale, Pa. Color white striped pink, flowers fairly large and never burst, stiff stem, robust grower, continuous bloomer. Dorothy crossed with Caesar.

Queens—By The Cottage Gardens, Queens, N. Y. Color bright maroon, extra long and stiff stem, heavy bloom, enormous strong calyx.

Servia—By Sewall Fisher, Framingham, Mass. Color white, early and constant bloomer, flowers large and do not burst the calyx, growth good and healthy.

VARIETIES OF 1896, '97 AND '98.

Abraham Lincoln.
Abundance.
Alba Perfecto.
Alba Superba
Alice.
Amazon.
Annie H. Lonsdale.
Argyle.
Augusta Rath.
Augusta Williams.
Azalea.
Baltimore.
Bertha Rath.

Bird-in-hand.
Brower.
Butler.
Cardinalis.
Cecilia Schweenke.
Chas. A. Dana.
Cleopatra.
Clio.
Conch Shell.
Dards.
Dazzle.
Defender.
Dr. E. P. Lawrence.

Edith Foster.
Elizabeth Skinner.
Emiline.
Emma Lowry.
Emma Quinlan.
Emma M. Thompson.
Emma Woelcher.
Empress.
Ethel.
Ethel Ward.
Evelina.
Manhattan.
Mark Hanna.
Margaret Rath.
Maud Adams.
Mayor Pingree.
McConnell.
Miss Blanche Payne.
Morello.
Mary A. Wood.
Morning Star.
Mrs. Chas. M. Fick.
Mrs. Chas. H. Duhme.
Mrs. James Dean.
Mrs. Matlander.
Mrs. Mary Hallock Foote.
Mrs. McBurney.
Mrs. Pauline Gussman.
Mrs. S. M. Inman.
Mrs. T. B. Reed.
Mrs. Wm. McKinley.
New York.
Nivea.
Northern Light.
Oneida.
Pike's Peak.
Pilgrim.
Princess.
Progress.
Queens.
Red Jacket.
Evening Star.
Firefly.
Flame.
Flamingo.
Flora Hill.
Flushing.
Fort Wayne.
Freedom.
Gaiety.
Genesee.
Gen. Maceo.
Gen. Maximo Gomez.
Glacier.

Gladys Rey.
Golden Gem.
Gold Nugget.
Grace Bolinger.
Guiding star.
Hiawatha.
Hon. T. B. Reed.
Hon. Wm. McKinley.
Immaculate.
Intensive.
Invincible.
Ivanhoe.
Ivory.
Jack Frost.
John's Scarlet.
John Young.
Joseph Jefferson.
Kathryne.
Kitty Schaefer.
Laura Degenhardt.
Laura E. Doly.
Laura Vick.
Lettie Coles.
Lucy Brenner.
Red Wave.
Robin Hood.
Rosa Pizer.
Ruby.
Saginaw.
Saudusky.
Sebe.
Servia.
Silver Ball.
Silver Star.
Snow Crest.
Snow Drift.
Storm Queen.
Thomas Card.
Thorley.
Trilby.
Triumph.
Twilight.
Utica.
Van Houtte.
Vice-Pres. G. A. Hobart.
Victoria.
Villicia.
W. D. Sloane.
White Cloud.
White Daybreak.
White Queen.
Wilhelm.
William I. Burke.
Winifred.

STANDARD VARIETIES.

Adelaide Kresken.
Alegatiere.
Alaska.
American Flag.
American Florist.
American Wonder.
Amy.

Angelus.
Anna Webb.
Armazindy.
Autumn Flag.
Bouton d'Or.
Bride of Erlescourt.
Bridesmaid.

Brutus.
Buttercup.
Caesar.
Cardinal.
Captain King.
Century.
Cherry Pride.
Chester Pride.
Christmas.
Charles T. Starr.
Constance.
Corsair.
Crimson Coronet.
Crimson King.
Crystal.
Daisy Bell.
Daybreak.
Dawn.
Dean Hole.
Della Fox.
Dr. Warder.
E. A. Wood.
Edelweiss.
Edna Craig.
E. G. Hill.
Eldorado.
Emily Pierson.
Eulalia.
Fred. Dörner.
Golden Gate.
Goldfinch.
Grace Darling.
Grace Wilder.
Helen Keller.
Hector.
Hilda.
Hinze's White.
Iago.
Jack Frost.
Jacqueminot.
J. J. Harrison.
Jubilee.
Kohinoor.
King of the Crimson.
Kitty Clover.
Lalandia.
Lawrence Thompson.
Lily Dean.

Yellow Jacket.

Lizzie Gilbert.
Lizzie McGowan.
L. L. Lamborn.
Lois J. Haetter.
Louise Porsch.
Magnet.
Mapledale.
Maud Dean.
May Queen.
Meteor.
Minnie Cook.
Miss Joliffe.
Mrs. Diaz Albertini.
Mrs. Carnegie.
Mrs. Ferdinand Mangood.
Mrs. Fisher.
Mrs. Henry M. Stanley.
Nancy Hanks.
Nellie Bly.
Nellie Lewis.
Ophelia.
Orange Blossom.
Peachblow.
Peachblow Coronet.
Portia.
President Garfield.
Pride of Kennett.
Princess Bonnie.
Puritan.
Purple King.
Robert Craig.
Rosalind.
Rose Queen.
Silver Lake.
Silver Spray.
Storm King.
Stuart.
Sunbeam.
Sweetbriar.
Thomas Cartledge.
Tidal Wave.
Uncle John.
Victor.
Western Pride.
Wm. F. Dreer.
Wm. Scott.
Wm. Swayne.
W. W. Coles.

MOISTURE THE PLANT'S GREATEST REQUIREMENT.

That which is most common usually provokes least attention. The fact that water is connected with all kinds of life, that it is a universal solvent, and that it is taken up freely by organisms, and evaporated from their surfaces in large amounts, encourages indifference toward the subject rather than excites interest.



CARNATION G. H. CRANE.

Water hides under no disguises; it is always separable and recognizable; it does not partake of the mysteries of the food supply.

The man who undertakes to protect plants from the accidents of outdoor life by housing them under a canopy of glass, becomes the step-parent to nature, and will succeed best when he most fully understands the needs of the charges entrusted to his care. It does not follow that the greenhouse cultivator is to imitate nature in her methods of supplying the wants of the plant; more economical, more direct, and more efficient methods are often possible, and in fact are often necessary to secure commercial success.

Because out of doors it rains on the just and unjust alike is no reason why the florist should drench everything within his houses daily. Overhead watering under glass may be a good imitation of nature, but it is not necessarily the way to bring about the result the florist has in view, healthy plants with a maximum development of flowers. The watering-pot and its substitute, the spray nozzle, are to be considered primitive implements, which are to be laid aside as soon as improved methods can be devised. A move in this direction has been made by carnationists in using a modified nozzle and applying the water to the soil without wetting the foliage.

It is because the carnationists have shown themselves progressive, and willing and ready to test promising innovations, that I venture to advocate to-day a radical change in watering the greenhouse, and one that requires some expense to inaugurate. I remember with pleasure the reception of my paper before this society at its Buffalo meeting, in which I suggested watering carnations between the rows and keeping the foliage dry as far as practicable. Although the wraith of the red spider seemed to hover over the assembly and threaten grave disaster to such a course, yet the suggestion was tested, approved, and under various modified forms became a part of standard carnation culture. I now come before you to advocate watering the benches from beneath the soil and practical abandonment of surface watering and spraying. It has sometimes been called sub-irrigation, but a better term is sub-watering.

The essential feature of this method, which was originated at the University of Ohio and has been tested in a number of

reasons why watering plants should be considered a matter of great importance and worthy of the most careful study.

In the first place every plant, generally speaking, consists of three parts of water to one part of all other kinds of substances. This proportion is quite universal for all living things. It is equally true of trees, grass, mosses and molds. It also holds for animals. A cabbage plant and the body of a dog do not vary much in the proportion of water to solids.

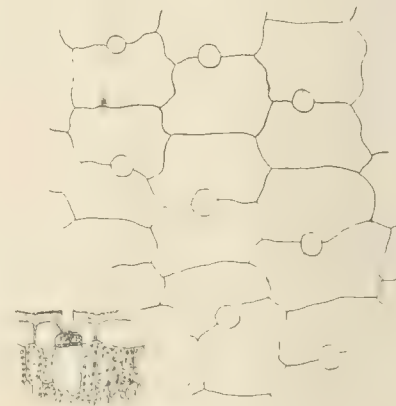
Immature organs contain more water than when matured. Although the water in a whole carnation plant, roots, stems, leaves and flowers amounts to about 75% of the total weight, yet in the young shoots, such as would be suitable for cuttings, it rises to 90%, and in the half formed leaves is even greater yet. If we remember that the chief growth of the plant takes place in the parts where the largest amount of water occurs, we shall be reasonably safe in inferring that water is a very essential factor in growth.

It has been ascertained, in fact, that the tissues must not only be saturated with water, but they must be supersaturated, that is, contain so much water that every cell is distended with the pressure, before growth will proceed. Each cell must be stretched by the internal pressure of the water, as a toy balloon is distended by the air forced into it. It is this by no means inconsiderable tension that renders young parts firm and brittle, and when it is removed they wilt. No appreciable growth can take place in leaves and stems that are wilted, or in a wilted condition. In the carnation the cell structure is so compact and the walls so rigid that the loss of water is often very considerable before visible wilting takes place. At this point lies a danger, for the plants may suffer for water for some time before the attendant notices their condition. With ideal treatment the plants should never wilt, and never lack for water to enable them to grow.

Not only must a certain amount of water be present in the plant to secure its active development, but a stream of water must be passing through the plant constantly, from the roots to the leaves. This upward flow of water is essential to most plants. It is the means of taking in the various fertilizing materials, or food substances, from the soil and transporting them to the upper parts of the plant, where they enter into the solid structures forming the tissues. The root hairs on the fine roots suck in the soil water, and its burden of nutritive material and force it forward into the larger roots and the stem, with pump-like activity, so long as water is available. The leaves dispose of the water by allowing it to escape from their surfaces as an invisible vapor, leaving behind all substances held in solution.

In some instances the water passes out through any part of the surface, but there are always stomata, minute openings, sometimes called breathing pores, which permit it to escape much more readily. The carnation has the surface of all green parts, both stems and leaves, overspread with a layer of white wax, which is impervious to moisture. All transpiration must therefore be through the stomata. These openings are very numerous, there being from one to five hundred thousand on every leaf. Unlike most plants, the carnation shows no material difference in the minute structure of the upper and lower surfaces of the leaves. They contain no spongy tissue, and have the stomata distributed evenly throughout, both above and below. If one

should look through glasses that magnified as much as a common microscope, the leaf would appear to be thickly studded with round openings, like little wells (see fig. 1), and peering into one, some way below the surface would be seen a double valve that automatically opens and closes (see fig. 2), much as the lips open and shut to permit or prevent the passage of substances into the mouth.

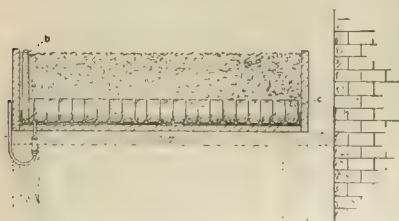


FIGS I AND II.

These are the guard cells, and when they are shut, little or no moisture can pass out or in. There are two conditions especially under which the stomata are closed; the first is when the plant wilts. This is a fortunate arrangement, for it tends to prevent loss of moisture at a time when the roots for some reason are no longer able to supply the needs of the plant. The second condition closing the stomata, is when water is dashed over the plant. A drop falls into each opening and causes the guard cells to swell until they effectually fill the passage. It matters not how much water the roots are taking in at the time, the whole water system of the plant is clogged and development is retarded.

Sometimes the movement of water through the plant is stopped, even when the stomata are open; for when the atmosphere is saturated it is evident that evaporation from the plant must necessarily come to a standstill. Perfect saturation of the atmosphere is probably rare even in a closed greenhouse, but partial saturation must in a measure check the internal water stream, and in so far must be detrimental to the best development of the plant.

If there is anything that the structure of the carnation plant and the known function of the organs clearly teaches, it is that there should be a never failing supply of moisture for the roots, and a fairly dry atmosphere for the foliage. I venture to say that these conditions can not be better met than by sub-watering. The present method of surface watering, even when most skillfully done, probably never gives the plants the full amount of water they would use. The soil is alternately too wet and too dry, and besides often suffers from a lack of water at the bottom of the bench although the surface seems wet enough. The difference between the amount of growth when an ample and constant water supply is provided, and that secured from the usual surface method of watering is always a source of astonishment when fairly tested and the results clearly set forth. I have no data to present in growing carnations by the new method of sub-watering; and will not detain you with figures taken from



BENCH ARRANGED FOR SUB-WATERING.

places for various glass-grown vegetable crops, consists of a water-tight bench with a layer of open material on the bottom through which water moves readily, and the filling of the bench completed with soil in the usual manner. The bench is kept moist by supplying water to the porous layer beneath, from which the soil takes it by capillarity. No water is applied directly to the soil, and all use of the nozzle is done away with. Before giving the working details of this method, I wish to call attention to some of the



CARNATION MAYOR PINGREE.

crops of vegetables. But that the carnation will respond to this method as have other plants, there can be no doubt.

One other point needs mention in this connection. The physical character of the soil has much to do with successful cultivation. Some writers maintain that it is quite as important an item as the food supply. With sub-watering the soil remains light and friable, readily permeated with oxygen from the atmosphere,

easily penetrated by roots, and at all times in the best of condition for serving the plant. The soil of the bench once suitably prepared for the reception of the plant remains so, or even improves on account of the upward movement of the water through it. This is in marked contrast to the compacting that follows every application of water to the surface. Surface watering drives out the air from the soil at each watering, keeps the upper

layers wetter than beneath, and makes it difficult to provide for the needs of the deeper roots.

Beside the advantages in sub-watering which I have mentioned, there are others which are incidental features, but by no means unimportant. One of these is the freedom of the surface of the soil from weeds, moss and slime. The surface layer can even be kept quite dry, and act as a mulch, if desired, and at any rate it

will be the dryest soil in the bench. The dryness of the surface of the benches, and of the air throughout the greenhouse, will have a marked effect in preventing and holding in check all kinds of parasitic diseases, both fungous and bacterial, a desirable result that the carnationists are fully able to appreciate. The causes which prevent the inroad of germs, promote the functional activity of the leaves on the lower parts of the plant and they remain green and healthy much longer than usual, greatly to the advantage of the plant.

It is evident that the writer believes that the proposed system of sub-watering is in many ways a good thing, and nowise injurious. He also believes that it can be made commercially profitable. The trial bench at the Indiana Experiment Station, which has been in use two years, chiefly for lettuce, is fitted with a water-tight lining of zinc, on which soft building brick are placed edgewise, their lower angles having been chipped off to permit freer movement of water between them. On this layer of brick the soil is placed in the usual manner. The water is run into the bottom of the bench through vertical tubes at intervals along the front, and at the rear overflows are provided at an inch above the bottom to guard against accidental flooding. Gauges, consisting of a simple bent tube, show when the water is exhausted. The bricks take up the water, and pass it on to the soil above, slowly and uniformly. By running a water pipe along the bench opening into each vertical tube, the whole bench or the whole greenhouse, can be watered at once by turning a single stop-cock, and thus do away with one of the time-consuming features of greenhouse work. Whether this be the best way in which to provide for sub-watering, time will reveal; but it is efficient, lasting and not expensive beyond profitable returns.

I have pointed out that the plant's greatest need is water; that three-fourths of its substance is made up of water; that it directly controls growth by maintaining internal pressure; and that a constant stream through the plant is required for healthful development. I have called attention to the disadvantages in supplying the plant, especially carnations under glass, with water in the usual manner, and not wishing to be opprobriously called a theorist, lacking practical ideas, have pointed out a better method, which has had some preliminary trial. I shall feel that I have not misjudged the importance of the matter to commercial growers, if any members of this society should find it profitable to make practicable application of the suggestions of the paper.

J. C. ARTHUR.

LAST SEASON'S INTRODUCTIONS.

Perhaps the two most notable introductions of the past season are Harrison's White and Flora Hill. The latter has proved to be even more than was claimed for it. The former being sent out as a sport from Scott, raised expectations which it has not been able to meet. Your secretary has had letters demanding that the society take some action on this matter, claiming that the variety was no more a sport from Scott than the writer was a sport from an elephant. If there was evidence of an attempt to defraud, the society would be justified in taking some notice of such letters, but those of us who know Mr. Harrison also know that he honestly thought the variety a sport from Scott, and thinks so to this day. We, as a society, have no evidence to the contrary, for while the variety has



CARNATION MRS. THOS. LAWSON.

been a disappointment in most places, it has done well with a few, and at this date, February 10, is doing fairly well everywhere. There is a possibility that a variety that can sport color can also produce a bud variation that would change the entire habit of the plant, and there is reason to believe that this may be an instance.

Nivea seems to be grown more successfully in the east than anywhere else.

Of the season's introductions in scarlet, Morello and Jahn's Scarlet have both given satisfaction to the growers.

In pinks, Mrs. Chas. H. Duhme and C. A. Dana have made many friends, but Victor seems the introduction of the season, as one hears very little of the others. It is a case of a sport that has proven of merit.

Maud Dean is recognized as one of the beauties of the season, and like some other beauties, very fickle and not to be depended upon.

Lily Dean is an excellent variety in its class, and seems easier of culture than others of the same class.

Mrs. Bradt has improved since being sent out and promises to be a standard sort.

Mayor Pingree has filled a long felt want for a good and profitable yellow.

Mrs. McBurney promises to replace Daybreak, being larger and easier to do, and having other points of merit over the older variety.

Taken altogether the season's introductions have been such that the introducers can be congratulated.

Of those being introduced this season—there are certainly plenty of them—and all seem of sufficient merit to try. It would take too much of your time to review all of them, and to have but one man's opinion would not do them justice.

This society should have a report from one of its members as to the health of the stock being sent out and if it will answer to the description given, this report should be a part of the annual meeting.

ALBERT M. HERR.

VARIETIES EXHIBITED.

Fred Dörner & Sons Co. had on exhibition twenty varieties, among them, Uncle John, fine; White Cloud, fine shaped full flower, grand stem; Gold Nugget, fine fringed yellow, full flower, good stem; Mrs. G. M. Bradt, extra fine, as usual; Mary Wood, fine white, slightly penciled pink; Dazzle, fine shaped scarlet; New York, pink, extra good color, fringed flower, good stem; Mrs. James Dean, pleasing shade of pink, seems a little weak in stem; John Young has the appearance of a fine commercial white, fringed flower, good stem; Storm Queen, white, not quite so full as White Cloud, but still a fine thing; G. H. Crane, scarlet seedling, large full flower of lively color, calyx fine, a plant exhibited shows it to be of fine growth; Bon Ton, scarlet, a little small, but of good color and fine stem.

Mr. C. W. Ward's exhibits are staged jointly with the above making a clean, well-grown lot.

E. G. Hill & Co., Richmond, Ind., showed a grand vase of Jubilee, fine large flower and good stem; also vase of 100 Flora Hill in good form; Painted Lady, fine deep pink, shading lighter on the edges, seems a little weak in stem, but otherwise a fine thing, white; Psyche, white heavily penciled with red, have seen this in better shape than shown here; vase of fifty blooms of Armazindy, fine shape, with extra good stems; America, red seedling, fine shaped flower, even color, good stem; Scarlet Queen, seedling, fine large fringed flower, extra fine as regards color and form, good stem; Arbutus, seedling, Daybreak color, but a little deeper, fine flower with good stem; Prima Donna, pink, similar in color to Triumph, fine shaped flower with good stem.

From Wm. Swayne, Kennett Square, Pa., Empress, rich crimson, making one of the finest exhibits, stem fully thirty inches long, plant shown indicates extra strong growth, though a dark one the color, is still lively, good stem and calyx.

Stollery Bros. had on exhibition a fine vase of Argyle, grand in every respect, the color showing well in artificial light.

Maud Adams from Frank Niquet, Patchogue, N. Y., looks to be a good commercial flower, of a deep pink color, fine fringed flower of good form, with good stem, holding the flower erect.

From W. P. Craig, Philadelphia, vase of 100 Flora Hill in good shape; vase of 100 Lily Dean, a finely penciled flower, but a little weak in stem; a fine vase of fifty Jubilee; a fine vase of Victor, together with some plants showing growth; it has the appearance of being very free, as the growth and everything is good.

Wietor Bros., Chicago, showed a fine vase of 100 Armazindy with stem fully thirty inches.

John Burton, Philadelphia, a fine vase of Alba Superba, flower a little small, but otherwise good.

Weber & Sons, Oakland, Md., a fine vase of 100 Mrs. McBurney, the same of Triumph and Mrs. G. M. Bradt, Flora Hill Buttercup, Daybreak, Goldfinch, Wm. Scott, Storm King, Hector, and fine vase of seedlings. These exhibitors showed a fine vase of Mrs. Robert Garrett rose which certainly seems to be a great acquisition, color, shape, form, stem and foliage being extra fine.

John Breitmeyer & Sons a fine vase of Mayor Pingree, a fine vase of Crimson; also good vase of Cerise Queen, a fine pink.

Messrs. George & Allen put up a nice stand of cut flowers, including Meteor roses, valley, tulips and Dutch hyacinths.

Mr. Peterson staged a nice vase of Princess of Wales violets.

Mrs. Thos. Lawson was staged in fine shape by Peter Fisher, Ellis, Mass., a fine large flower of good color and grand stem.

Chas. S. Baker, Utica, N. Y., staged Oneida, pink, fine color, but a little weak in stem; Red Jacket, scarlet, fine color, not so large as some reds, but otherwise good; Uncle Sam, a densely striped red and white; also two promising seedlings; Pluto, dark red, and Goliath, pink.

R. Witterstaetter, Sedamsville, Cincinnati, Ohio, staged a grand lot, including his peerless white Evelina, which was fine in every way.

Mr. Murphy, Cincinnati, Ohio, staged Portia, W. Scott, Daybreak and Mrs. Geo. M. Bradt in good shape.

Dan'l B. Long, Buffalo, N. Y., was on hand with a fine lot of Genesee, white, both flowers and plants being in good shape, and look to be very free, and a good market variety, but the flower is a little small compared with Flora Hill.

Mr. James Hartshorne, gardener to H. N. Higginbotham, Joliet, Ill., staged a fine vase of Tidal Wave with fine stems, also a grand vase of Jubilee.

G. A. Kuhl, Pekin, Ill., showed some elegant Brides, Bridesmaid and Belle Siebrecht roses.

Bassett & Washburn, Hinsdale, Ill., staged a fine lot of roses, carnations and mignonette, not for competition; they were all elegant stock and well done.

John H. Sievers, San Francisco, Cal., had a very interesting exhibit of seedling carnation, some of them being grand specimens, and looked in good shape after their long journey.

South Park Floral Co., New Castle, Ind., exhibited fine vases of Bride and Bridesmaid roses, also vases of Jubilee, Mrs. Geo. Bradt, Armazindy, Alaska and Albertini, all in fine shape.

Barnd Sisters & Co., Findley, O., staged a vase of darker crimson named Olive Snyder.

John Murchie, Sharon, Pa., had a vase of dark pink named Uncle Walter, fine color and stem.

J. P. Turner, Galewood, Ill., a vase of Van Leevan, flower a little small, but with fine stem; also vase of Daybreak.

Geo. Hancock & Son, Grand Haven, Mich., plant and blooms of their seedling Firefly, which they term a business carnation, which certainly looks to be very free; also a vase of lemon yellow, named Gold Coin.

W. W. Coles, Kokomo, Ind., showed a vase of elegant Kaiserin roses, and an American Beauty with stem about 7 ft.

From W. N. Rudd, Mount Greenwood, Ill., vase of 100 Pingree, fifty ditto, twelve ditto, 100 Mrs. McBurney, twenty-five ditto; two vases of 100 Flora Hill, also one of twenty-five; vase of 100 Jubilee, fifty Jubilee, and some others.

C. W. JOHNSON.

Societies.

MISSOURI VALLEY HORTICULTURAL SOCIETY—February 19 was the thirtieth anniversary of the existence of this society. A meeting was held on that date and the programme for the year's work mapped out. The following are the officers: President, Homer Reed, Kansas City; vice-president, Edwin Taylor, Edwardsville, Kan.; secretary, C. A. Chandler, Argentine, Kan.; treasurer, G. F. Espenlaub, Rosedale, Kan.; executive committee, W. D. Cellar, Edwardsville; G. L. Holsinger, Rosedale; M. E. Chandler, Argentine; J. A. Thompson, Edwardsville, and Edward Espenlaub, Rosedale.

LUCAS COUNTY HORTICULTURAL AND FLORICULTURAL SOCIETIES.—The January meeting was held at the home of Mr. J. H. Crane, Miami street. The attendance was large, there being present about 125 guests and members of the two societies. The meeting was called to order by President Counter, and the topics for discussion were: "Small Fruits," "Destructive Insects," and "Field Crops." Many of the members were of the opinion that the

prices on fruit trees, asked by nurserymen were too high, while those interested in the sale of trees thought they were too low. A joint meeting will be held at the county infirmary the second Thursday in February. Mr. Thos. Crofts extended a cordial invitation to all members and friends to be present at the next meeting.

TEXAS STATE FLORAL SOCIETY.—January 13 this society met for the purpose of discussing plans for the year's work. It was decided to have a committee whose duty it should be to pass upon the requirements contained in the constitution and by-laws as to the suitability of applicants for membership. The following were placed upon the application committee: Mrs. C. W. Harrison, chairman; Mesdames Layton, Puckett, W. K. Nundenhall, Lehman Sanger and Miss Anna West. Committee on premium list: W. L. Reese, chairman; D. D. Fairchild and Mesdames, W. S. Plunkett, S. W. Cohen, J. W. Henshaw, J. P. Carpenter, W. A. Hamilton and Miss Anna West and Mr. S. J. Mitchell, of Houston.

TORONTO HORTICULTURAL SOCIETY.—The second annual meeting was held January 12, in the council chamber of the city hall, about 50 members being present. Mr. H. J. Summers occupied the chair. Reports showed that the progress of the society had been very satisfactory, and the attendance at the monthly meetings had been very largely increased. At nearly all the meetings fine displays of plants had been made. The election of officers resulted as follows: President, J. McPherson Ross; first vice-president, Harry Lucas; second vice-president Edward Tyrrell; secretary-treasurer, Chas. E. Chambers; board of directors, Messrs. John Chambers, Geo. Vair, A. H. Ewing, E. Utley, H. Simmons, Geo. Mills, Thos. Manton, E. Collins, A. M. Watkins; auditors, Messrs. T. F. Hire and Thos. Ioliffce.



CARNATION ARBUTUS.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

— BY —

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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FRUIT PROSPECTS are generally good throughout the country.

ONE CHRYSANTHEMUM SHOW in England had 32,558 patrons last season, and over £600 was taken in cash at the doors.

THE TOBACCO CROP of Victoria, Australia, for the season of 1897-98 is reported a failure, and "blue mould" is given as the cause.

THE FRUIT GROWERS of Tasmania have completed arrangements for the shipment of 12,000 cases of apples to London not later than the middle of March.

THE SWEET PEA ARTICLES promised in our last issue are held over to March 15 to make room for the report of the annual convention and exhibition of the Carnation Society.

THE BEST CARNATIONS of the day appear to be Evelina, white; Jubilee, scarlet; Mrs. McBurney, light pink; Mayor Pingree, yellow variegated; Empress, deep crimson; Mrs. G. M. Bradt, white variegated.

A BILL has been passed by the government of New South Wales which will restrict, if not altogether prevent, the importation of insect and fungus pests into that country through the agency of diseased fruits.

IN A RECENT FRENCH chrysanthemum election Madame Carnot heads the list with 1,011 votes. The first American variety is Col. W. B. Smith, with 706 votes. Others sorts produced in this coun-

try occur in the following order: Mrs. Henry Robinson, 623; Niveus, 584; Wm. Falconer, 578; Philadelphia, 557; Eda Prass, 421; The Queen, 411 votes.

ONE OF THE NEW things offered in sweet peas this year is the variety Countess Fitzwilliam, a cross between Cupid and Emily Henderson. It is described as of semi-dwarf habit, with large, pure white flowers produced in great abundance.

IT IS REPORTED to be so dry in some parts of western Kansas, says the *California Fruit Grower*, that a man had to run his well through a clothes wringer every morning in order to get water for cooking purposes. In other places water is damp only on one side.

A NEW POINSETTIA was recently exhibited in Paris by M. Fatzter. The plant is said to be the result of a cross between *P. pulcherrima* and *P. rosea*, and its bracts of very bright color reach their most decorative stage some fifteen days earlier than the former.

THE BLUE DAHLIA is sought by one of our correspondents, and we regret that we are compelled to inform him that there is none. Like the blue chrysanthemum, the blue rose and the blue carnation, this so far is only a dream of the enthusiasts, but there are many earnest men who believe that the dream will yet be realized.

CROCUS ZONATUS is described by the *Gardeners' Chronicle* as a lovely autumn flowering species, which grows in loamy soil, and commonly found in the cedar and juniper forests; often also in the Alpine region of the Cilician Taurus. The flowers are of a silky, pale violet color, with distinct golden yellow marks at the base.

FIFTY CRATES OF PINEAPPLES, shipped from Honolulu to Los Angeles, Cal., have been buried because they were found to be badly infested with mealy bug. The consignment was examined by one of the horticultural commissioners, when the mealy bug was at once detected. This bug is a most dangerous pest in the fruit districts of California, and its appearance in a few orchards several years ago caused a great deal of trouble and expense before it could be eradicated.

FORESTRY LAWS in OHIO will be made to do the work which they were designed to accomplish, if the horticulturists of that state are enabled to carry through their plans. The Columbus Horticultural Society held a special meeting recently in one of the halls of the Ohio State University to hear the report of the committee for revising the forestry bill. On the committee were Prof. R. Lazenby, chairman; Mr. D. C. Burson, Prof. Thomas F. Hunt. The bill provides that a department of forestry be established which shall be under control of the Ohio State University trustees, to promote the preservation and planting of forest trees in Ohio. A tract of land belonging to the Ohio State University is to be set apart, and also four other tracts to be secured as substations. In view of the benefit derived, whatever number of acres are planted with trees, according to specifications, outside of incorporated towns and cities, the owner should be entitled to an easement of twice the acreage in taxation; also woodland, according to specifications, shall be exempt from taxation. To carry into operation the provisions of this act \$8000, or as much thereof as may be required, may be expended by order of the trustees during the year 1898, and \$7000 during the year 1899. The preceding articles were

adopted with great unanimity by the society, and as it is not an experiment but in a line with the methods adopted or under consideration in nearly all the states, the bill ought to meet with favorable consideration.

NOTES ON NOVELTIES.

It is often wise for those possessing either a limited planting space, or a slim pocketbook, to postpone the purchase of plant novelties until they have been proved worthy of culture by others with better facilities in their immediate neighborhood; and it is plainly the duty of those who do make a practice of toying with these brilliantly heralded debutantes to inform their flower-loving friends of those that possess sufficient merit to warrant general cultivation.

The climatic conditions prevailing in Chicago and along the southern shore of Lake Michigan are not such as to provide a genial home for out-door roses, and therefore any additions to this favorite family of plants which will succeed here are doubly welcome. I have wintered and bloomed Lord Penzance's hybrid sweetbriars, and found them strong growers, free bloomers, and far more interesting in color and form of flower than the type, and strongly recommend their introduction into the gardens of this region.

I can say the same of Manda's hybrids of Rosa Wichuraiana. The Crimson Rambler has ceased to be a novelty, and does well here if planted in the open where it may have a free circulation of air. When trained against a wall, it mildews badly.

Lambert's "Three Graces," viz., Aglaia, the Golden or Yellow Rambler, Euphrosyne, or Pink Rambler, and Thalia, the White Rambler, are under trial, and the coming summer should determine their value. The Empress of China has proved valuable, when given a slight winter protection.

W. C. EGAN.

Highland Park, Ill.

MAGNOLIA NOTES.

It is generally understood among planters that spring is the proper time to plant magnolias. Just why it is that fall planting is not a success I do not remember ever having seen explained. But I have an opinion on the subject, which is that they die when fall planted because of mutilated roots. I think that if care were taken not to break a root the planting would be as successful as that of any other ordinary tree. My reason for this opinion is that nurserymen tell us they never hesitate to plant small magnolias in the fall. The stock which has been layered through the summer is taken up in the fall and placed elsewhere, and none of it dies. It is the same with small plants. There seems no other explanation than that of its being a question of whole roots. The young plants retain theirs and they live, the larger plants lose more or less of theirs and they die. It is probable that decay sets in where the roots have been broken. In the spring the ground is becoming warmer day by day and growth becomes active, preventing the decay of the roots, which appears to set in on those that are dormant.

Perhaps it is the necessity of warmth of soil which has led to the almost universal opinion that just as the buds are bursting is the best time to plant. It is beyond controversy that they rarely die planted at that time. For all that, I would be quite willing to run the risk of

planting just as soon as the soil is dry enough in spring. The time between this period and that of bursting buds is so short that it would make but little difference, and this practice has led me to believe, for early planting has always resulted favorably with me. Get good roots, prune closely and plant well, then I think the precise time in spring is immaterial. Every planter knows the roots of trees should not become dry while transplanting is going on, so I will only say be extra careful with magnolias. Among tree magnolias, as they are called, *M. acuminata*, *M. tripetala*, *M. Fraseri* and *M. macrophylla* are the best known. Of these *M. tripetala* is the most valued, because of its lovely pink pods of seeds in late summer. *M. Fraseri* is noted for its fragrant flowers and *M. macrophylla* for its very large leaves. These are all native sorts. A newer species, from Japan, *M. hypoleuca*, may prove a rival to *M. tripetala*.

The shrub class embraces such sorts as *M. glauca*, *M. conspicua*, *M. Lennei*, *M. obovata*, *M. gracilis*, *M. Soulangeana*, *M. speciosa*, *M. Norbertiana*, *M. Alexandrina*, *M. Kobus*, *M. stellata*, *M. parviflora* and *M. Watsoni*. Many of these become of tree size in the course of time, but being of shrub-like outline and flowering when of quite small shrub size, they have come to be classed as shrubs. I have seen *M. glauca* of tree size in the swamps of Delaware, and near cities such as New York, Philadelphia, Baltimore and Washington, on old estates, are specimens of *M. Soulangeana* and *M. conspicua* of treesize. Those with lots of room at command will desire to plant all kinds, but were I limited for room I would select from the list the following six in the following order of preference: *M. Soulangeana*, *M. conspicua*, *M. obovata*, *M. stellata*, *M. glauca* and *M. Lennei*. *M. parviflora* and *M. Watsoni* are both beautiful, but they are scarce as yet in cultivation and might not be as easily obtainable as the others. *M. glauca*, though usually found in swampy places, does very well in any fair position on a lawn.

Magnolia grandiflora, the beautiful evergreen species of the south, is hardy to a point north of Philadelphia. William Falconer reported it hardy at Dosoris, Long Island, but there it became deciduous in winter. All the way from Philadelphia southward it thrives well. It wants to be in the shade in winter, and should be planted where the sun will not shine on it after about 10 a. m., and at the same time let it be as well protected from winds as may be possible.

Philadelphia. JOSEPH MEEHAN.

CREEPING PLANTS FOR SHADY PLACES.

At one time about the only plant thought of for a shady place, such as beside a dwelling or under trees, was the common periwinkle. This is still among the best for the purpose, but no longer the only one, as there are many other plants which thrive fairly well in such a situation. The common Japanese honeysuckle is excellent for such work, and gives satisfaction to those who use it.

This is not *Lonicera Halleana*, but *L. brachypoda*, easily distinguished by its bushy growth and shining foliage. It grows close to the ground, rooting as it goes, and soon forms a mat of the deepest green. For a bank liable to be washed away in time of heavy rains it is invaluable. I saw it on one occasion used in this way, but to relieve the mass of green it presented, some hypericums and other low

growing shrubs had been planted among the branches, much to the general advantage. This honeysuckle is a useful plant for covering low walls, stumps of trees or other objects desired to be ornamental.

English ivy is another plant which could be used much more than it is. So many persons fail to plant it from a belief that it is not hardy. In this vicinity the foliage suffers a little in winter when the vine is growing up the walls of a house, but not at all when it is on the ground or but little above it. It behaves well under trees in the shade, and, as with all plants that root as they grow, it has the power of sustaining itself well in dry places.

Many of your readers are acquainted with the moneywort, *Lysimachia nummularia*, a plant often used in hanging baskets, having pretty green leaves and yellow flowers. This is a great spreader, and is much at home in a damp place, shaded or sunny. As with the other plants named, as the shoots lengthen they make root, and very soon this plant makes a carpet of green. Sometimes a stray piece of it will find its way from the garden to the roadside, and very soon a large mat of it will be found where the piece takes root.

There is a veronica which spreads much as the moneywort does and prefers the same situation, but is not such a rapid grower. This is *V. serpyllifolia*. It is often found on lawns, where if not eradicated it kills out the grass, such a dense mass does it make. It would be found a satisfactory plant for shady places by those who might try it. Another species, *V. officinalis*, is well suited in a dryish situation, shaded or otherwise. It is usually found on quite dry banks, where it flourishes nicely. It is not such a fast grower as *V. serpyllifolia*, but it makes a sturdy, clump-like growth, which is very enduring. I have seen it flourishing in places so dry that the wonder was that it existed at all.

The partridge berry, *Mitchella repens*, does not object to a quite shady place. It takes some time to establish itself, but is most beautiful when it has spread to form a mat. In its wild state when it is met with in masses of a yard or more square, as it often is, with a sprinkling of its red berries nestling among the foliage, no lover of the beautiful can pass it unnoticed.

CLARE.

FAYETTE HORTICULTURAL SOCIETY.—The following are the newly elected officers for the year 1898: Jonas Scholl, president; A. M. Sinks, secretary; J. C. Rea, treasurer; Dr. F. D. White, corresponding secretary.

OKLAHOMA TERRITORIAL AGRICULTURAL, HORTICULTURAL AND IRRIGATION SOCIETY.—At the fifth annual meeting of this society held January 19, the following officers were chosen: President, Prof. E. E. Bogue, entomologist of the Stillwater experiment station; vice president, W. O. Beach of Perkins; secretary-treasurer, C. A. McNabb, of Oklahoma City.

TWO SOUTHERN MINNESOTA SOCIETIES CONSOLIDATE.—At a very enthusiastic meeting held January 15 the Fillmore county and Southern Minnesota Horticultural societies decided to join hands under the name of the Southern Minnesota Horticultural Society. The following officers of the united society were elected: President, John C. Hawkins, Austin; vice-presidents, Jonathan Freeman of Moscow, O. W. Moore of Spring Valley, Olin L. Gregg of Austin; secretary-treasurer, Robert Parkhill, Chatfield.



WILLIAM NICHOLSON.

WORKERS IN HORTICULTURE. IV.

We are pleased to be able to present herewith a portrait of the president-elect of the American Carnation Society, Mr. William Nicholson, of Framingham, Massachusetts. The honor was well deserved, for Mr. Nicholson has been a sincere worker in the best interests of the society. He was elected district vice-president for the New England States in 1895, and also served the society in that capacity during 1896 and 1897. This was a period of much trouble for the society, and there can be no doubt that the presence of such staunch men as Mr. Nicholson at the head of affairs was a potent factor in bringing about the progressive spirit which has recently become unmistakable in the society's affairs. Mr. Nicholson is well known as a successful grower of carnations, and we are confident that the society will lose nothing of its prestige during his term at the helm. We congratulate Mr. Nicholson, and wish both him and the society plain sailing and prosperity.

Fruits and Vegetables.

TOMATOES UNDER GLASS.

In his article on tomato forcing, January 15th issue of GARDENING, W. N. Craig states that he prefers to train plants to three stems instead of one as is usually practiced, and also that he is able to obtain nearly double the quantity of fruit. This is contrary to our experience and that of others who have conducted careful tests to determine this point.

This is an important question to the commercial grower. Which method will give the larger yield area for area? The single stem training requires more plants, but this is an item immaterial to the question. We decidedly prefer the single stem, i. e., each stem on its own root. The New York Experiment Station carefully studied this question last year. An average of approximately four ounces per square foot bench space larger yield was obtained with single stem training than with the three stem. Their conclusions were regarded as quite conclusive.

We have found the camel's hair brush unhandy for pollinating and now use the

bowl of a spoon or better the end of a thin piece of wood slightly hollowed to catch and hold the pollen. By holding this under the flower and tapping the same with the finger the pollen is shaken off the anthers and into the spoon, and the stigma then touched with that collected, insuring thorough pollination.

Chemin Market is sometimes mentioned as a good forcing variety of the tomato. Don't try it. While it yields well the fruits are open-celled, lacking in that meatiness now so much desired.

A. T. JORDAN.

New Jersey Experiment Station.

PITHY CELERY.

EDITOR GARDENING:—Can you tell me what ailed my celery last season? Every plant out of 20,000 of the White Plume variety was pithy. Had to trim off stem after stem until nothing remained but the heart, and sometimes that was very tough. The crop was grown on low land—a mixture of muck, clay and some sand on a subsoil of blue clay.

Had heavy rains the last of June and last of July. The ground was a perfect mush for a week at a time. Some of the plants were set back so that they did not make salable heads. The ground was treated with a good coat of fresh cow-manure and turned under just before plants were put out. Do you think a good application of wood ashes would help? If the fault is with the soil, what would be the proper amount to apply?

Where can I get good seed that will not show a green plant to every six or eight and seed that has been saved from solid plants? I have an artesian well and a system of irrigation in the event of a drought.

A. E. MABBOTT.

Union Center, Wis.

Understanding that your correspondent means that the outer stems of his White Plume celery were hollow and stringy—often called "pipey" as the term "pithy," i. e., having a pith, is erroneously applied to the celery plant—I should diagnose his as a very bad case of "hollow stem," caused principally by a saturated soil, one probably with an excess of humus in its surface and an impervious condition of its subsoil.

There are so many other causes for such a condition of his crop than spurious soil that we should ascribe this condition to them rather than to the seed. Celery requires for best results a damp cool soil, but while true muck lands produce an earlier and more luxuriant growth, soils consisting of more alluvia produce the most "solid" and long-keeping celery.

Surface soils of a peaty character, especially when new and the decomposed humus not incorporated well with the subsoil, be it loam, sand or clay will in wet seasons produce results such as are in question, while with these conditions corrected a good "solid" crop can be produced from the same bag of seed which failed under the unfavorable circumstances.

The White Plume variety is not of such a thoroughly fixed character, but that unusual and unfavorable conditions during growth can cause reversion, so that we have seen crops grown from the same bag of seed, one of them producing fully one-half green stalks and the other crop showing perhaps not over ten green plants in 1000, though in this respect it is a very rare crop of White Plume celery which will not show a few green stalks here and there in the field.

I would advise your correspondent, if his land lies so low that in a wet season water rises nearer than sixteen inches to the surface, to ditch or underdrain so that his field cannot become "mushy," to plow deeply and to apply 1000 to 1400 pounds of unleached ashes on such a nitrogenous soil as his evidently is and to fertilize only with thoroughly rotted manures.

There could be much more written upon this subject than space allows of here, but for the purpose of a more exhaustive reply I would recommend to Mr. Mabbott a perusal of the "Celery Manual," revised edition which will answer his further queries regarding irrigation, seed, etc.

BURT EDDY.

THE SAN JOSE SCALE SCARE.

Inquiries go far in showing that at least some of the San Jose scale alarmists keep putting themselves in print with the view of securing a fat job as inspector or commissioner, and the question is now frequently asked, "Will these fellows scare away other foreign markets besides Germany?" Our information shows that where the San Jose scale has longest been it is on the decrease, and in some sections that were infested twenty years ago the scale has nearly, if not quite, disappeared. Many attribute this disappearance to natural death, some to its parasite, some to spraying.

Inquirers made of authorities in California, inform the writer that in that state it is easier and less expensive to combat the scale than codlin moth or fungus diseases, and that one thorough spraying destroys this pest, that they do not have to burn trees infested with San Jose scale, and further, that it is receiving less attention than some of the pests we have east of the Rockies. Prof. Slingerland of Ithaca, N. Y., says: "I believe that those fruit growers who now successfully combat the canker worm, pear psylla and curculio will be equally as successful in dealing with this pest."

The idea has been advanced that the scale in colder climates proves harder to combat, that nature in such a climate will, or does thicken the scale. But if it is a native of Tasmania, Japan and Hawaii, will it thrive long in our more severe climates? Its decrease in some sections and disappearance in other sections where it first appeared may be taken as a promise that we are not going to be visited, after all, with the eighth plague.

No one advocates neglect. But the alarmists will do more damage than the San Jose scale. If the papers keep on giving nothing but the alarmist side, other foreigners will get panicky and do as did Germany. But above is given simply the result of inquiries made of those where the San Jose scale has longest been.

IRVING SPAULDING.

The Flower Garden.

YARD CULTURE OF ROSES.

There are three important things to be considered to be successful with the cultivation of out-door roses: First, a suitable location; second, suitable soil, and last, but not least, suitable varieties. I know of many persons who go to the woods to get light soil from old tree stumps which they use for preparing a bed for roses, and, after planting their

roses in this soil and watering them carefully, feel discouraged that they do not make a strong growth.

In order to grow roses in the yard the first important thing is a good open exposure, if thirty or forty feet away from large trees so much the better. A yellow, rather heavy fibrous loam with good drainage is considered the ideal soil for roses. Spread two or three inches of well-rotted cow manure over the bed, thoroughly mix same to the depth of one foot or a trifle over. A bed prepared in this manner should grow first-class roses; if your soil is a hard, sticky clay it should be removed to the depth of fifteen inches and replaced with soil such as the above.

I have often been asked the best varieties for outdoor culture, and if I was to be confined to but three varieties, I should plant Clothilde Soupert, Mme. Caroline Testout and Kaiserin Augusta Victoria; these are three gems of the first water, perfectly hardy here, good growers and of good color. I do not wish to convey the idea that these three varieties are the only sorts we should grow as there are many handsome and satisfactory kinds which should be in every collection. I will name twelve of the varieties which have given the most satisfaction here: Clothilde Soupert, pink shading to white; Mme. C. Testout, clear pink; Kaiserin Augusta Victoria, white shading to light yellow in center; Meteor, velvety crimson; Belle Siebrecht, rosy pink; American Beauty, deep rose; La France, pink; Champion of the World, rosy pink; Mignonette, very dwarf, carmine pink; Wootton, light red; Mme. de Watteville, white with pink shadings, very beautiful; Souv. de la Malmaison, flesh color.

These varieties are all hardy in this vicinity, (except Mme. de Watteville) if planted in a well drained soil; a light covering of manure, mostly straw, thrown carelessly over the plants late in fall will be beneficial. In a later issue I will give my views on summer treatment of yard or outdoor roses.

W. W. COLES.

Indiana.

TUBEROUS BEGONIAS.

For several years we have had some beds of tuberous begonias planted outside, but until the past summer they have not given satisfaction. I now believe that in former years we did not select a suitable place to grow them. Last spring we had two additional beds made on the north side of buildings. Each of the beds had a border of tuberous begonias which bloomed profusely all summer and autumn, and were greatly admired by all who saw them.

The tubers were one year old. They were potted the first week in March; put in 5 inch pots in a mixture of two parts sandy loam, one part leaf mould, one part decomposed cow manure, and one part sand. They were placed under the greenhouse bench, with the temperature of the house kept at 60°, and watered occasionally.

When they had started to grow they were placed on the greenhouse bench near the glass. They were removed to the frames about the first of April, where they got some heat from a hotbed. The hotbed was arranged in this way: At both ends were portions in which heating compost was placed. The plants were placed on a board platform near the glass, over the space where no heat was generated.

The boards were covered with ashes and the plants were carefully tended as regards watering and ventilating. They

were well hardened off before planting out, and were good strong bushy plants by the last week of May. There was some cold weather for about a week after the plants were set out, but they did not seem to suffer any set back. As soon as the weather warmed up they commenced to grow and continued to grow and flower all through the season. We had other begonias planted in the same beds that had been flowering in the greenhouse all winter, and about ready to throw away. Being short of plants we planted them out, and after a little time they made splendid plants and bloomed all summer. They were *B. manicata aurea*, *B. semperflorens gigantea rosea*, *B. subpeltata*, and several others.

For the back of the beds we had French cannas, *Carica Papaya*, silk oak, *Caladium esculentum*, *Cyperus alternifolius*, *Abutilon Thomsoni*, *A. Souvenir de Bon*, crotons, *Anthericum variegatum* and *Strobilanthes Dyerianus*. The last named plant seems to do better in the shade than in the full sun.

The original soil was yellow clay. This was taken out to the depth of eighteen inches and replaced with a compost of two parts sandy loam, one part leaf mould and one part decomposed manure. The beds were somewhat below the grass border, so that the water would have a chance to soak through the soil, and not run down the sides as is generally the case when the beds are raised in the center.

The plants were mulched with a few inches of half-rotted leaves, and watered occasionally when the soil showed signs of dryness. But I noticed that the soil did not get dry very often, as the clay bottom retained the moisture and the mulching prevented the surface soil from drying out. In watering I apply it under the plants, for if watered overhead the force of the water will break the plants and spoil the flowers. Plants grown in shade and under the conditions here described are very brittle, and may be easily broken with a stream of water.

In conclusion I would say where the soil is very sandy it would be well to put a few inches of clay in the bottom of the bed and pound it down; it will help to retain the moisture. A mulching of half-rotted leaves or well-rotted manure will to a large extent prevent evaporation.

Ithaca, N. Y.

ROBERT SHORE.

IRIS KÆMPFERI.

EDITOR OF GARDENING:—I have a bed of Iris Kæmpferi which have been in their present situation for about three years. It has seemed to me that they would do better if I should move them to a bed specially prepared with a view to holding the water, which now apparently runs off as fast as applied owing to the surface of bed being too high. The following points have presented themselves, which I beg to refer to you. 1. If I move them this spring will it interfere with the bloom this season? 2. In moving should the clumps be separated? 3. I have always understood that owing to their moisture loving propensities they should be planted in a bed lower than the surrounding ground so as to hold all the water possible. Now will not this be apt to rot them out during winter? 4. Some of the sorts have so far as I can make out never bloomed. Why is this?

G. H. CHAMBERLAIN.

The Japan irises should not be moved too frequently. As a rule they will do well for five or six successive years undisturbed;

after that time the center of the clumps will make but a weak growth usually, but the younger sprouts around the outside still send up strong flower stems if the plants do not crowd each other. A moist situation is preferable for them, but excellent results have been obtained in rather dry soil, where the plants received liberal waterings during the time they were in bud and while flowering.

Early spring is the best time to move them. Division is necessary only when the old clumps are too large, any plant having more than eight or ten growths is better cut in two. Transplanting, no matter how carefully done, will hurt the quality and quantity of flowers for the first season; it is only natural that this should be so, but the new bed with ordinary care should give entire satisfaction after the first season.

Lowering the bed a few inches below the surface of the surrounding ground will do no harm; the winter's water or ice over them will not hurt plants which have made a full season's growth, though it would perhaps seriously injure a fall planted bed. But I do not consider it necessary to lower the bed so much. The fall and winter moisture can not be of much benefit to the plants. Early in summer and while in flower is the time they need it most, but our summers are usually rather dry and watering must then be resorted to in either case.

Those of the plants which have not yet flowered are presumably the weaker growers. All varieties are not alike in constitution and the more vigorous have outgrown the weaker ones, depriving them of the necessary air and light, or else the bed was planted too close from the beginning and the plants did not get an even start.

It is a common mistake when laying out a bed to form a mound, raising the center more or less. This is decidedly wrong and should be discontinued not only with moisture loving plants but in all cases. When such a bed becomes thoroughly dry once, it will require a week's continuous rain to moisten the earth in the higher portions of it, and but few of our plants can succeed under such trying circumstances. All beds should be level with the surrounding ground so that water when applied or the rain as it falls may not run off to the sides, but must enter the soil evenly in any and all parts of the bed.

I would suggest to G. H. C. to dig up about one-third or one-half of his plants, wherever they are crowding each other most, in the rows or any other way; leave the remainder undisturbed, adding a liberal quantity of well decayed manure to the bed, making a new bed with those plants which are taken out. The old bed would give him abundance of flowers this summer and the newly planted one might take its place another year if he does not care to retain both of them, for it is more than likely that the older plantation will grow with renewed vigor after thinning out and be highly satisfactory for some years to come. K.

WISCONSIN STATE HORTICULTURAL SOCIETY.—The following are the new officers elected in Madison last week: President, L. G. Kellogg, Ripon; vice-president, T. Johnson, Baraboo; secretary, A. J. Phillips, West Salem; treasurer, R. J. Coe, Fort Atkinson; corresponding secretary, W. J. Mayle, Yorkville. The sum of \$500 has been appropriated to make an exhibit at the Omaha exposition, and it is expected that a good showing will be made.

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HORTICULTURAL CLUB, REDLANDS, CAL.—At the last meeting of this club Prof. T. H. Kirk read a paper on "Deciduous Fruit Growing." The following new officers were elected: President, H. D. Moore; vice-president, C. H. Lienau; treasurer, Mrs. Mary Criag.

THE RIVERSIDE HORTICULTURAL CLUB, CAL.—The following are the newly-elected officers: President, E. W. Holmes; vice-president, James G. Kyle; secretary E. L. Koethen; executive committee, B. Edmiston, James Boyd and J. H. Reed. An interesting report was read by Mr. Reed on experiments on frost protection by artificial measures showing that rapid strides were being made in this direction.

CATALOGUES RECEIVED.

W. W. Rawson & Co., Boston, Mass., seeds; Vaughan's Seed Store, Chicago, Ill., seeds; D. Landreth & Sons, Philadelphia, Pa., seeds; B. O. Curtis, Paris, Ill., trees, shrubs and fruits; W. W. Barnard & Co., Chicago, Ill., seeds; Buell Lamberon, Portland, Ore., seeds; Theodosia B. Shepherd, Ventura-by-the-Sea, Cal., seeds; John N. May, Summit, N. J., plants; L. L. May & Co., St. Paul, Minn., seeds; A. W. Livingston's Sons, Columbus, O., seeds; W. Atlee Burpee & Co., Philadelphia, Pa., seeds; Phoenix Nursery Co., Bloomington, Ill., trees, shrubs and plants; Isaac C. Rogers, Danville, N. Y., fruits; Schisler-Corneli Seed Co., St. Louis, Mo., seeds; W. N. Scarff, New Carlisle, O., fruits; Carpenter & Son, State Line, Miss., trees, shrubs and fruits; Japanese Nursery, Boston, Mass., trees, plants and bulbs; Wm. E. Hand, Jr., Argos, Ind., fruits; E. Gill, Oakland, Cal., trees, shrubs and fruits; E. E. Burwell, New Haven, Conn., seeds

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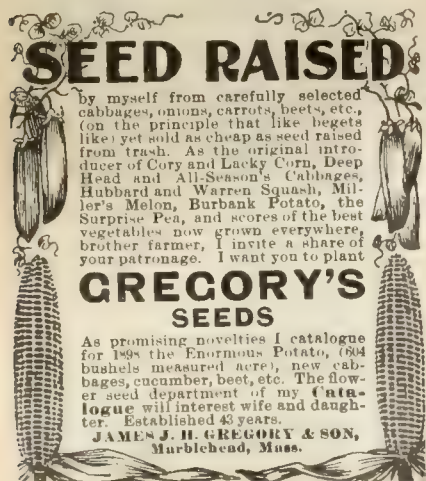
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S. T. Walker, Forest Grove, Ore, seeds; J. E. Jackson, Gainesville, Ga. plants; E. J. Hull, Olyphant, Pa., fruits; J. L. Schiller, New York, seeds; J. C. Suffern, Voorhies, Ill., seeds; R. Witterstaetter, Sedamsville, O., plants; Theo. Bock, Hamilton, O., plants; J. R. Johnson, Dallas, Texas; fruits; A. B. Davis & Son, Purcellville, Va., roots; D. M. Andrews, Boulder, Col., seeds; Vilmorin-Andrieux & Co., Paris, France, seeds; Chicago House Wrecking Co., Chicago, Ill., building materials; Page Woven Wire Fence Co., Adrian, Mich., wire fences; A. Branson, New Sharon, Iowa, fruits; Mark H. Wetherbee, Charles City, Iowa, plants and seeds; Chesmore-Eastlake Mercantile Co., St. Joseph, Mo., seeds; J. Whittier, Beverley, Mass., plants.—106.

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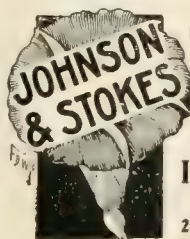
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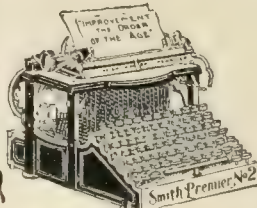
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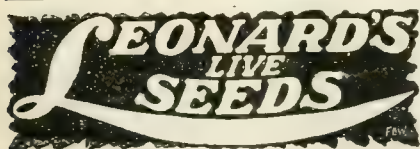
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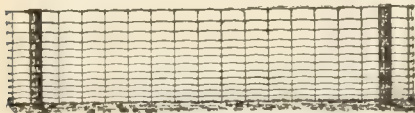
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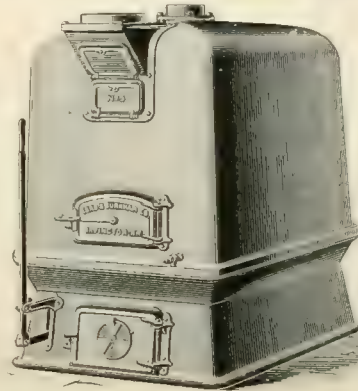
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A CHICAGO STREET IN WINTER.

Trees and Shrubs.

ARE WINDBREAKS PROFITABLE?

This question has been discussed pro and con ever since people took interest in tree planting; especially has it been discussed in the prairie countries, where a large majority answer yes. The reason I now mention it is on account of an article against them from a Michigan fruit grower and a postal card from Connecticut in favor of them, both in reference to peach orchards. The article goes on to state that the row of trees nearest the windbreak does not grow as large or as fast as the rest of the orchards, and further on mentions the high price that peaches sold for last season, leading one to believe he had a crop of them. The writer of the postal card says: "I am very much interested in evergreens as a windbreak. In my opinion the peach trees in this town that had a protection

in some form or other were the ones that bore full crops last year. I suppose there are a great many who think differently; I believe those things that I see." X.

WINTER ENJOYMENT OF TREES.

The glory of a tree is not always lost with the falling of its leaves, and it even displays in winter features and characteristics which not only reveal the secrets of its summer beauty but are often in themselves as fascinating as the summer form itself. There is not indeed the softness and luxuriance that comes with the warmer season, but there is felt a strength and majesty which summer does not know. The warmth of color has disappeared, but in its place are the soft grays which better unite the trees with their winter surroundings.

At first thought, a tree robbed of its foliage seems only a skeleton whose sight must be endured until it is clothed again in spring. In reality, it is not a skeleton, but is only passing through another

stage of its existence. That its character is as strong as ever is shown by the vigor of its twigs and winter leaf-buds, which are plainly not dead, but robust and full of health. Each tree has a characteristic arrangement and form of bud and branch, even to the point that the acute observer can distinguish different species by them almost as readily as by the leaves. The bark, too, has its characteristic texture and color, and the whole assumes a habit which is distinct and unmistakable.

Notice two trees, the elm and the oak. The elm no longer carries its weight of foliage, but its limbs overhang in the same graceful fashion as they earlier assumed. More beautiful than the effect of its leaves is the delicacy of its spray of twigs. It seems like a slender net thrust out to catch the frost work as it falls. But with all its slenderness we feel that there is a hidden force behind which holds it in readiness for action.

Even more forcible is the oak. Indeed never does the oak display the strength and vigor of which it is an emblem more

than it does now. I know nothing more striking in winter than a young bur oak. Its limbs stand out with all the ruggedness of a being fully equipped to endure winter's hardships and to glory in the struggle. Then it shows how strongly it is rooted to the earth, suggests the future massiveness of its trunk, and exhibits the inner vigor which causes its twigs to dart here and there in all directions in defiance of gravitation.

We enjoy these things because they are ways in which nature acts. The struggle of thousands of years has caused the trees to assume these forms and adopt these ways as being best fitted for them to continue life and to prosper. Vitality is fully evident, but only as a sleep. We feel that there is an energy in the trees which is only waiting to be awakened. Perhaps we are thinking of that time which is to come, but the tree as it now is offers much for our admiration, by the manner in which it adapts itself to the inclemencies of the season and because of the energy which its form reveals. A. P. WYMAN.

TREE CUTTING IN BOSTON PARKS.

There has been considerable agitation and discussion of late with regard to the thinning of some tree plantations in the public parks of Boston. The superintendent of parks, Mr. J. A. Pettigrew, considered the removal of certain trees necessary to the welfare of the woods, and removed them. The uninformed newspapers and public made protest, and Mr. Pettigrew, in a recent letter to the chairman of the Board of Park Commissioners, explains the situation and deals with his critics as follows:

"Regarding the petition which Mr. Winslow and other gentlemen presented to the park board at Pine Bank, January 24, asking that the board select advisers from a list of names submitted by them, based on the statement that in the matter in question (the thinning of woods and plantations) 'you rely on your superintendent, who himself does not wish to be wholly responsible,' I beg to say, I have no desire, nor have I expressed any, to be relieved of any responsibility in this work. It is one of necessity where healthy natural effects are desired, and one that practical foresters and landscape gardeners understand.

"These statements certainly are not the result of close observation or investigation, as can be proved by present conditions. I am able to say that the intent and purpose of the work that has been done on the plantations and woods were the opposite of those contained in the charges. The work of marking the trees for cutting was done in the summer, when the trees were in full leaf. Consequently, the condition of each tree could be accurately ascertained. Special effort was made to retain or create pleasing or picturesque groupings. Where trees were being injured by too close crowding, the weak or sickly were marked for cutting. In no case has a single fine tree been sacrificed. All ground cover, shrubbery or undergrowth of native material has been carefully preserved, except possibly in the case of young tree saplings which, for obvious reasons, have all been cut out, leaving only those selected to replace sickly trees or for other requirements.

"It is to be regretted that this work had not been commenced as soon as the lands came into the possession of the park department. Judicious thinning from year to year, with the planting of native shrubs would, ere this, have shown the effect of intelligent effort to assist nature,

for nature can be assisted and the evidence of assistance be concealed.

"Hastily considered criticism of the landscape gardener's effort to improve the condition of growing timber by thinning out crowding trees is probably largely to blame for the deplorable condition of the trees in most of our parks throughout the country. Central Park, New York, contains scarcely one fine specimen of a tree, even in grounds set apart for ornamental work; its woodlands are forests of bare poles. Prospect Park, Brooklyn, still contains hundreds of nurse trees, planted for shelter to the intended permanent trees, which they have smothered and malformed, instead of protecting, because they were not cut out when their intended work was accomplished. Much of the planting will have to be commenced over again, the ruin being irretrievable, and all because of the mistaken sentiment against the cutting of a tree.

"The places from where trees were cut last year cannot now be identified; it is ever found so in forestry, the branches, having more room, spread out, the boles feather out; the general health of the tree is improved; undergrowth is encouraged, having more light. The cutting down this year has even now left little evidence; none will be found in summer except in the greater wealth of verdure and natural beauty."

TREES TO ADORN STREETS.

At a recent meeting of the Massachusetts Horticultural Society Mr. Wm. R. Smith, curator of the United States Botanic Garden, Washington, D. C., delivered an address on the above subject, of which the following is an abstract:

In Washington, where the soil is generally poor, we usually remove two or three good-sized cartloads from a hole and replace with the best top soil to be had. We do this in dry weather for obvious reasons; we stir up the bottom and avoid compacting the sides of the same. Do not plant too closely. The character of the trees selected must determine the distance apart. One important aid to success is the tree box. It is doubtful whether by shading the stem of the tree from the sun to prevent scalding, or holding the newly planted tree steady, is its most valuable service. Do not attempt to go into the woods or uncultivated ground for trees, except as a dire necessity. We were com-

pelled to do this at first, for some things, and were moderately successful with American sycamores, elms, scarlet maples and tulip trees. It is my deliberate opinion that in the interest of economy it is better to get nursery-grown trees. Every city, village or suburban town ambitious for distinction for being well planted with trees, should have a nursery of its own, where healthy trees can be reared. Get clean seedlings from some reliable source, cultivate, prune and train them in the way they should grow, in the best ground obtainable. This last suggestion is of great importance. Trees from a poor, thin, gravelly soil, or from a wet, sour, undrained one, are worthless.

That queen of American trees, the sugar maple, when bark-bound from any cause, should be dispensed with and a young healthy one substituted. It refuses to do duty as a curbstone tree. The Norway maple is one of the best curbstone trees, less self-assertive than some others. From a rare volume styled "Hand-book of Ornamental Trees," by Thomas Meehan, I find the following under *Acer dasycarpum* (white maple): "One of the finest of our native trees. It is so often seen in a half-starved, stunted state, as a street tree, that one might be incredulous of its beauty, when under proper circumstances, from a mere description." One would think the editor had recently visited Washington. His description suits the actuality at the present time. The limited supply of moisture and food obtainable makes it necessary that this large growing tree should be judiciously pruned. With roots caged and confined, it is not possible for it to sustain a large top. Intelligence should take this whole situation into consideration and act accordingly. The gorgeous autumnal tints of the swamp maple make it an object of interest to every lover of trees. Not being able to obtain this tree in the nursery, we went to the woods, with only moderate success. Had we cut the small trees to the ground when planted in the nursery, I think the result would have been better.

The ash-leaved maple (*Acer Negundo*), a herald of spring, with its beautiful green foliage, and its rapid growth, would be an excellent street tree, were it not for the bag-worm and web-caterpillar being so fond of it. It should be skillfully pruned to keep it in good health. With the sycamore maple, we have had only



GINKGO TREES IN WASHINGTON, D. C.

moderate success. It soon gets covered with seeds, indicating its arrival at maturity, a desirable condition in a fruit, but not in a street tree. Some fine specimens of *Acer campestre* planted on the Capitol grounds have been tomahawked lately, agreeable to an uninstructed, semi-popular request. A variety of this English maple grows more freely and is altogether a larger, different appearing tree, and may, when more abundant, make a street tree.

The tulip tree is not, in my opinion, a good curb tree, although the parkway is planted with it. If the trees are well cared for it will make the handsomest avenue in Washington. Permit me to introduce one which I think is among the best as a curb tree, the ginkgo or maiden-hair tree. Two of these interesting trees have flourished in Washington for sixty years or more. Several streets are now planted with them, where they are very fine, and fruit freely. I have never seen an insect near them.

The western rock elm (*Ulmus racemosa*), is a tree worthy of more attention. A dozen or more as curb trees mixed with other elms are not attacked by an insect as far as my observation goes. It is a good street tree. The wahoo (*Ulmus alata*) is another not attacked by insects. It is worthy of trial in the North. I have only to mention the majestic American elm and say, give it room; it must have room. To say more in New England would be supererogation. Another remark we might make—it bears the knife when young, but not the saw. In after-time, only dire necessity should be the excuse.

The plane tree (*Platanus orientalis*) in Washington is one of the best all-around street trees. They are greatly improved when severely trimmed; even the hollow-stemmed old specimens on Pennsylvania avenue, when so treated, were greatly renovated in appearance. Another tree not troubled with insects is *Gleditsia triacanthos* (three-thorned acacia). It bears pruning and is improved by it. The sweet gum or liquidamber is only a moderate success as a curb tree. It is attacked by insects. Of the genus *quercus* (oak) I have my doubts as a curb tree. As lawn trees, or in lines in the park they are grand. The American linden has been planted and is doing well, although not a perfect tree; it is much better than the European, which is apt to be destroyed by the borer. The same may be said of the ash, especially the European, which is a very variable species; none of its forms escape this terrible enemy. With the American species the borer is not quite so successful in disfiguring and destroying the trees. *Fraxinus pubescens* and *F. quadrangularis*, where there is good soil, are worthy of trial. With the horse-chestnut we achieve satisfactory results owing to the opportunity afforded by heavy filling where the trees were used. In poor soil, with no chance to root deep, by the last of the summer it is not beautiful to look upon.

Permit me here to name a few probationers for the office of street decoration, and as sanitary cooling agents: *Phellodendron Amurense* I think would fill both offices; *Zelkova crinata* and *Z. acuminata*, *Celtis occidentalis* (American nettle tree) and *C. crassifolia* (hackberry) we would call necessary trees. Birds get the fruit in hard weather, and for this reason we recommend them to be planted in parks and other places. The Japanese catalpa is of more upright habit than the American species, and is, I think, a probable street tree in some sections. *Ostrya Virginica*

(hop hornbeam) would make a nice, small but rather slow-growing street tree. *Koeleria paniculata* would be a doubtful candidate for street decoration. I make bold to recommend that much abused tree, *Ailanthus glandulosa*, for certain streets. The objection to this tree is its odor when in flower, which can be overcome by cutting it back every two or three years. The members of the willow family affect damp, swampy, agreeable places, and in various ways are candidates for the high honors of quinine, as a cure for intermittent fever.

I have never been in favor of spending large sums of money for moving trees, even to satisfy public demand. I have looked in vain for permanent success in this matter. It usually takes a young, healthy tree about the same time to grow up as it does a large one to die, after being removed. Much more might be said on this subject, but it is enough if I show you that it is better to observe and think before spending money on transplanting large trees.

By cutting back severely, careful watering when necessary, and cultivating with the assiduity of a good farmer towards his corn crop, we reached a phenomenal success in the early days of tree planting in Washington. Another suggestion; do not let dudeism drive from your street trees the white-washer. If he uses lime, blue or other colored clay, sulphur, lamp-black, salt or other material, he will greatly improve your trees, and add to the health of the neighborhood, perhaps killing the much-dreaded microbes of diseases as well as scale insects and fungoids. It will not stop horses nibbling at the bark; woven wire must be used for that. For bad boys who injure trees, and for gas leaks it is difficult to suggest remedies. I can only say, mend the latter and try to improve the former. Arbor Day and memorial tree planting should go hand-in-hand, creating a sentiment of love and veneration for trees.

The Flower Garden.

POINTERS ON SWEET PEA CULTURE.

There are no flowers so popular or so much appreciated during the summer season as are sweet peas. It is not long since there were but ten sorts at most to select from, while to-day we have hundreds of varieties of such varied form and shade as to be almost indescribable. Sweet peas have a warm place in the hearts of all lovers of flowers, as have roses, violets and carnations. One great cause of their popularity is the ease with which they may be cultivated. The small outlay and the certainty of having a good crop of flowers with the little attention required are strong arguments in their favor.

The time is rapidly approaching when at least a first sowing should be made, —just as soon, in fact, as the ground is in good workable condition after the severe frosts are over. It is of no use to sow sweet peas on poverty stricken soil and expect good results, but any piece of ground that will produce a good crop of wheat, roses or strawberries, will also raise good peas, sweet or otherwise. The seeds should be sown in lines two inches deep, two lines five inches apart to each trench. The seeds should be pressed down firmly, tramping in with the feet. The plants in the lines should be about three inches apart, but it is advisable to sow the seeds thicker than this so as to provide

against failure, thinning out the plants to the required extent when it becomes evident that there is no longer any danger of loss through ordinary causes.

When the plants show the fourth leaf, a little soil should be drawn to them. For supports employ either light brush or wire netting. The latter is perhaps the cheapest and best. That of 3-inch mesh is the most serviceable, and it should be at least three feet six inches high, increasing the height according to the vigor shown by the plants in any particular soil or location. Stakes driven on either side of the line will be required to support the wire, and they should be four feet apart, and arranged with such alternation as will insure to those on opposite sides of the line a space of two feet apart. It will be necessary occasionally to run a light string along the line, fastening the vines in position to the wire. This applies also where coarse brush is employed. Sweet peas are gross feeders, and delight in plentiful supplies of water during dry weather. Wood ashes is good for them, and a mulching of thoroughly decayed manure, or grass mowings from the lawn can be applied with advantage.

Flowers should be closely picked every day so as to prevent the formation of seed pods. If the flowers are allowed to remain on the vines, the seeds will speedily mature in hot weather and shorten the flowering season very materially. Where plantations of any considerable extent are made, varieties to name are preferable to mixtures, however fine the latter may be. The varieties are so numerous and all are so beautiful that a good selection is rather difficult to make, but the following will be found valuable in their respective colors: White, Blanche Burpee and Emily Henderson; mauve shades, Emily Eckford and Princess May; blue shades, Captain of the Blues, Boreatton and Duke of Clarence; rose and pink shades, Apple Blossom, Blanche Ferry, Early Blanche Ferry, Peach Blossom, Duke of York, Katherine Tracy, Mrs. Gladstone and Royal Robe; scarlet and crimson, Brilliant, Ignea, Cardinal and Mars; shades of yellow, Mrs. Eckford, Lady Beaconsfield and Alice Eckford; variegated, America, white red and pink; Aurora, orange and white; Mrs. Joseph Chamberlain, white and rose; and Princess of Wales, mauve and white.

JOHN THORPE.

NOTES ON SOME OF THE NEWER SWEET PEAS.

The past season was a peculiar one in the vicinity of Detroit, and seemed to have a curious effect upon some varieties of sweet peas, notably Blanche Ferry, Extra Early Blanche Ferry and Little Dorrit. I had nine different stocks of these sorts planted in trial, occupying altogether some seventy-five feet of double rows, and among the thousands of flowers produced there was not a single normal colored blossom, all being to a greater or less degree like the sport called American Belle, with pink or pink and white striped wings instead of the nearly white ones of the normal flower.

It is a curious fact that the two stocks of Little Dorrit (which were from unimpeachable sources) should show precisely the same sportive tendency as the Blanche Ferry, though I understand that Mr. Eckford developed it from entirely different strains. Some of the identical lots of seed used were planted in other Detroit gardens and also at Toledo, Ohio, and on the Huron Peninsula; and while the Detroit flowers were like my own, the Toledo and Huron plantings furnished



L. — E. —

NEW SWEET PEAS

some of the finest and most typical colored blooms I ever saw. This new variation in these varieties illustrates the effect that cultural conditions often have over the sweet pea and makes it probable that some of the other varieties of which I am to write developed abnormally and behaved differently at Detroit than at other places.

The Bride. This new white is certainly well worthy of a place. The vine, while not quite so hardy and firm as that of Emily Henderson is more so than that of Blackie Burpee and the individual flowers are fully as fine in size, form and color in fact cannot be distinguished from those of the latter sort. The especial merit of the variety, however, is in its length, strength and grace of flower stem and the disposition of the blooms thereon, being one of our best sorts in these respects, and forming an exceedingly graceful bunch. To me this quality of gracefulness of stem and pose of flower is an important element of merit and should be considered in the same way as size, form and color in estimating the relative merit of varieties. Sweet peas are seldom enjoyed as a single stem, whether as growing on the vine or gathered into a bunch to add to the attractiveness of dress or surroundings, so that availability for this purpose is surely worthy consideration.

Imma Donna. This is quite similar to Katherine Tracy and I will compare it with that variety. Although it was a very vigorous grower producing a great number of flower stems, each with three or four blossoms, due to the stem being as common in this variety as three is in the other. The stems are heavier and the flowers more widely spaced and less gracefully poised and roll much more, so that though there are more of them they form a less graceful and effective bunch, and are not quite so well colored and brilliant as that of the American trial. In color as grown at Detroit they are about alike, but the new variety is a uniform, deep and

delicate but brilliant rose pink or blush crimson, rather better defined and more persistent in Katherine Tracy.

The standard of the English sort was a little—and but a little—the largest and best in form, being a little fuller at the base. At first it is well expanded and nearly flat with just sufficient incurve to give grace but it soon rolls forward in a way which though graceful, lessens the effectiveness of the flower, while that of the American sort remains boldly expanded till it fades. The wings were larger and better formed but to my taste less gracefully rolled. I saw the two varieties growing in the same gardens in New York and Vermont where they developed relatively about as at Detroit, but in Canada Katherine Tracy did much better, being very large and persistent and fine in color, while Prima Donna did not do so well as at Detroit. On the other hand in California Prima Donna did decidedly the best, being far better in size, form and color and the standard rolling much less than at Detroit, while as grown there Katherine Tracy was no better in size and was poorer in color than in Michigan, and very much inferior to the Canadian blooms.

Royal Rose. This seems to me the largest and finest formed sweet pea yet introduced. The plant is strong growing and produces a good number of stout flower stems bearing two or three close set and a little stiffly poised flowers. The standard is of immense size and of great substance. It is nearly round with its longest diameter a little below the center. It is boldly expanded and remains nearly flat till the last. The wings are very large and thick, beautifully incurved rather than rolled and retain their form better than most. If taken off and laid flat the pair will exactly cover the standard. In color the flower is a cold purple pink, something less though a shade darker, than Apple Blossom and it is nearly the same shade throughout except in the

back of the standard, where it is darker. This is a magnificent flower, but it is one to admire rather than love and in spite of its size and beauty it is not likely to become as popular as some of its softer colored and more winning sisters.

WILL W. TRACY.

SWEET PEAS STILL IN THE ASCENDANT.

Twenty-five novelties in sweet peas for 1898! So the list stands, with several counties to hear from. Personally I am not responsible for any additions to the list; not but what there are varieties of merit among them, but because it is unfortunate to swell the list at such a wholesale rate.

Mr. Eckford puts out seven, W. Atlee Burpee & Co. nine, Peter Henderson & Co. one, S. T. Walker, of Forest Grove, Ore., issues his first catalogue as a sweet pea specialist, and names seven that he thinks worthy of a place. Mr. Sam Hamilton gave the names to the two best on Mr. Walker's list. I suppose the Sunset Seed Co. will offer a very fine dark, satiny, indigo blue novelty, which they sent out for trial last year. Vaughan offers the three varieties of which Mr. Lynch let a little trial stock go last year, and which having been on my catalogue were counted in as 1897 novelties. And I understand that Vick puts out another double variety.

I have decided not to issue a list for 1898, although, as an easy way to answer inquiries, I have had the novelty list printed. My wish is to fall back into the ranks of impartial critics. I can not say, as one sweet pea enthusiast said to me to-day, that he was disappointed in the entire novelty list for this year. It does not present as much originality of color as I hoped. But we must remember that we are now at a stage where we have had some colors only in name and are getting nearer and nearer to the genuine thing. Mr. Eckford claims on the strength of a first-class certificate to have now a

bright orange variety. We have had orange rose, orange pink and orange salmon, but now there seems to be an advance in purity of color in this line. One of the finest sorts Mr. Eckford ever offered was Her Majesty, and this year he puts out a new bright rose self, which I shall expect to see in an advance on that grand sort. When I was at Wem he had the dark maroon color of Stanley carried up to greatly improved size, and now he offers his latest work on that color.

I thought at one time that if one should go to England and see Mr. Eckford's work he could report with a good degree of accuracy on the description of his novelties, but although I took notes on the spot describing each of last year's set, not one of them seems to tally over here with my description. It seems strange to have the Sunset Seed Co. put Queen Victoria down as a third-class production that should be rejected. I considered it the finest thing in the whole set. It won abundant honors in England. It was a rich cream primrose, showing in its substance its black seed origin, and not betraying with any noticeable effect the latent fawn color that our climate seems to bring out. I am told that it broke here, as the Countess at Aberdeen did the year before. Then I was enthusiastic about the new red of Salopian, inclining decidedly towards dark cherry. But much of it has seemed almost identical with Mars in this country.

I don't want to be cynical about these things, for I know that Mr. Eckford's work is grand. I would like to go in among his advance seedlings and get an ounce of true seed of about three first-class novelties each year and take that seed direct to California, and then add on the same number of the finest selections from American seedlings. Six real good novelties a year would excite our enthusiasm sufficiently.

But there is another side to this matter. The ruinous under-cut in contract prices has forced our best growers to some kind of protection. They have found a little relief in novelty work. In all fairness they are entitled to it. If I knew that a certain grower will take special pains with an improved strain of some old popular sort, and that he will father over improved strain and feel a special obligation to hold it up in quality, I am willing he should rename it, and get some just compensation for his work on it. He could get nothing for growing the old deteriorated stock. Bitterly was I bitterly till it ran out. Now it is better than ever as Maid of Honor, and when that deteriorates they can call it Maid of Orleans if they want to, just so they give us back a stock of that sort and have edged sweet pea. There never was any sense in calling it Bitterly anyhow.

Mr. Eckford's advance set stands as follows. Prince of Wales, award of merit, R. H. S., a bright rose self of intense color. Lady Mary Currie, award of merit, R. H. S., and four first-class certificates a deep orange pink, delicately shaded rose. Chancellor, four first-class certificates, standards light orange, wings bright orange pink. Countess two first-class certificates, a light cream with tinged rose. Duchess of Sutherland, a pearl white delicately suffused with light pink. Duke of Sutherland, first-class certificate, deep claret, wings bright orange like the whole flower becoming bright indigo blue with age. Black Knight, a deep maroon self.

The Barpee novelties are sure to give satisfaction in respect to germinating, quality, and abundant bloom. The set this year gives us some genuine seedlings from the original crossing done by C. C. Morse & Co. The stock sent out last year under the name of Barpee's American seedlings really gave us our first taste of Morse's hybrid stock, and now we shall

have many fine things from it. I once got the secret of crossing Eckford's finest sorts and the product is a lovely set, an unlimited field of new sorts. Our Californian growers, and especially Morse, are just getting into this rich field. And it is no easy question how to introduce this array of novelties. I have been in the sweet pea business for the last year, but I do not recommend one as a beginner for other folks. I can see honest, straight work behind every one of the current novelties this year, not one of them being as much of a fraud as my Columbia seemed to have been last year. The Barpee set will kindle enthusiasm for their splendid grandiflora size and luscious habit as well as their novelty in color. The finest of all is Stella Morse, it's best guarantee being that the name has been dead in reserve for several years till a variety worthy of this favorite daughter and sister could be produced. It is a beautiful novelty, a rich creamy bud, the edge deepening into rose pink. I do not think that any one of the set will be disappointing.

A word about Pink Cupid. Its blushing cheeks are not due to any embarrassment it feels over the misfortune of White Cupid. It is a little cherub. I had no trouble with it. It germinates and blossoms perfectly and takes kindly to pot treatment.

I am glad to see Lynch's Bride and Emily Lynch well spoken of. The former is such a fine white, and its germinating quality is so perfect that it ought to be generally tried. I could not pick out from it quite such large blossoms as Blandie Barpee showed, but it made up in quantity. And for a rich, warm effect I commend the Emily Lynch. It is really a remarkable introduction. Mr. Lynch has two or three more ready. Then Golden Gleam is a grand strain of Mrs. Eckford. It is a pity the stock is not



STELLA MORSE



PINK CUPID

more plenty, for we want it in our shows. Walker's Coronet was a thing of merit, coming the nearest to an orange stripe. It's short stems were a defect. He is working on a Flambeau mixture, and the best things in it are some grandiflora stripes of ox-blood red. I wish to commend his work now that I have no further business connection with him. For seven years I have watched his conscientious work, and if sweet peas have any future he deserves a show in the rewards. Peter Henderson & Co. have secured a novelty called Minnehaha from him, a fine selection from his Flambeau hybrids. The prospect for 1898 is bright. The reports indicate that the sweet pea shows will be more of a feature than ever.

W. T. HUTCHINS.

Publications.

BOOKS AND BULLETINS.

PRINCIPAL INSECT ENEMIES OF THE GRAPE.—By C. L. Marlatt.—Department of Agriculture, Washington, D. C., 1898.—This is a reprint in popular bulletin form of the matter which appeared on the subject in the Year-book of the U. S. Department of Agriculture for 1895. The pamphlet of twenty-four pages contains excellent descriptions and illustrations of the insect pests peculiar to the grape, with remedies.

A FUNGUS DISEASE OF THE SAN JOSE SCALE.—By P. H. Rolfs.—Florida Agricultural Experiment Station, Lake City, Fla., 1897.—The author of this bulletin calls attention to a fungus enemy of the San Jose scale which may become of much service in the eradication of this noxious insect. It is claimed that the fungus is a native of Florida; that in several instances it is recorded as an important factor in controlling insects; that it may be transferred to trees infested with the scale, producing a disease among the insects; that large quantities of material may be produced in the laboratory in a short time and at slight expense; and that the laboratory-grown material may be applied successfully by fruit growers.

A BACTERIAL DISEASE OF SWEET CORN.—By F. C. Stewart.—New York Experimental Station, Geneva, N. Y., 1897.—Sweet corn in one or two sections of the country, Long Island and Iowa, is subject to a disease whose presence is made manifest by the wilting and withering of the plants without apparent cause. The wilting may take place at any stage of growth, but is most likely to occur about the time of flowering. This behavior is attributed to the presence of bacteria, which it appears are most destructive to early varieties. So far field corn and pop corn are entirely exempt. The disease is disseminated chiefly by means of the germs which cling to the seed, but also by manure, implements and washing of the soil. The principal remedies are care in the selection of seed and the planting of resistant varieties. Lime and sulphur, applied to the soil, have been tried and proven unsuccessful.

GARDEN-MAKING.—By L. H. Bailey.—The Macmillan Co., New York, 1898.—Prof. Bailey, in this new book, again displays his pronounced and finished faculty of getting together the best information that is to be had on a given subject, and presenting it in a style at once entertaining and instructive. This little work is an addition to the eminently useful garden-

craft volumes, and in many respects we consider it the best of the entire series. To amateur gardeners, for whom it is designed, it will be simply invaluable; but even the seasoned professional man will find it worthy of perusal, and he will be surprised at the frequency with which new and striking ideas start out from the pages in graphic outline. The book covers every form of outdoor gardening in sufficient detail to satisfy the ordinary needs, and standard authorities are named for reference in cases where full particulars may be desirable. Every subject is admirably illustrated—we might almost say every idea, so numerous are the pictures—and in addition to showing the best results of good work and the most useful devices, the course usually followed, the figures have companions in many cases which expose the defects of various contrivances and bring out the errors of faulty plans and inartistic arrangement.

REPORT OF THE PARK AND OUTDOOR ART ASSOCIATION.—The first report of this new organization has come to hand, and it contains a large amount of valuable information concerning public parks and their management. It was, we believe, the park commissioners of Louisville, Kentucky, who took the initiative in the formation of the association, and the first meeting of the parties interested in the movement was held in that city, "For the purpose of discussing such matters as appertain to park development, in order that a wider influence may be exerted throughout the country in the line of park work and in the proper construction of pleasure grounds for the people." The report covers the proceedings of the first meeting, which took place May 20, 1897, and was well attended by representative men from various sections of the country. Papers were read by John C. Olmsted, Andrew Cowan, James Gurney, H. W. Jones, T. H. MacBride, L. E. Holden, Warren H. Manning, Wm. S. Egerton, Wm. T. Pierce and Lewis Johnson. The essays of these gentlemen are embodied in the report, and they are all valuable. We hope to have an early opportunity to refer to some of them at greater length in these columns. On the motion of H. W. Jones the following resolution was unanimously adopted: "That it is the sense of this convention that the successful development of parks throughout this country depends very largely upon the entire elimination of politics from their control and management; and we urge upon the citizens the necessity for the appointment as park commissioners and other officials such persons only as have sympathy, taste and ability in the preservation and culture of nature and art." The next meeting of the association will be held at Minneapolis June 23, 1898.

Miscellaneous.

MELONS AND CUCUMBERS IN ADJOINING FIELDS.

Your letter asking my views as to growing cucumbers and melons in adjoining fields is received. This, perhaps, is a subject that the seed grower will naturally wish to avoid discussing publicly; but as it is of vital importance to the market gardener, as well as to the private gardener, it should be carefully considered by the growers. The generally accepted idea has been that cucumbers and muskmelons will not mix or cross. The agricultural experiment stations have con-

ducted experiments along this line, and I have yet to see a report where an actual cross or hybrid has been produced, and yet we see reports by private individuals who claim they have produced such hybrids.

My own observations lead me to believe that they will not hybridize. If this was possible we would have to-day a considerable line of types half melon and half cucumber, whereas we have but three types that appear to stand midway between the two fruits—Vine Peach or Vegetable Orange, the little ornamental Pomegranate, and the Snake cucumbers. Any one of these will cross readily with muskmelons, while two at least will cross with cucumbers. I am strongly of the opinion that the isolated cases we read of, where it is said that a cross has been produced between a cucumber and a melon, can be traced to a little blood appearing from one or the other of the above varieties. I do not know the correct history or origin of these varieties, but do not think they are hybrids of either cucumbers or muskmelons.

The matter of quality is different. For some six years I have watched closely to see what results, if any, would accrue from growing melons beside cucumbers. My advice now is, "Don't do it." While I question their actually mixing, yet, the delicate flavor of a melon is easily injured, and every effort should be made to retain all its spicy, aromatic qualities. Outside conditions may influence where they cannot control; cucumbers may influence quality where they cannot influence type.

J. C. ROBINSON.

A WORD ABOUT HOTBEDS.

It is now time to start hotbeds, even with a half-dozen sashes, if this has not already been done. Any number of sashes may be employed, but six affords accommodation for quite a good supply of material, while more, of course, will be needed where the demands are large.

A southern exposure, sheltered from north and west winds, should be chosen as a site for the bed. Here a pit must be dug six feet wide by eighteen feet long and fifteen to twenty inches deep, throwing the soil where it will be handy for use again inside the frame. Having a pit of the desired capacity, fill it to a depth of ten inches with fresh horse manure, treading it down firmly and repeating the process until the surface of the manure is flush with the ground level. The frame, which should be from eight to ten inches higher on the back or northern side than in front, may now be placed in position.

The difference in the height of the back and front of the frame will give it the proper angle of exposure to the sun, which is a strong factor in the subsequent development of the plants. The manure, after standing a day or two, should be covered with five or six inches of soil, with the sashes over all, leaving the entire fabric until the heat falls to about 90°, which may be ascertained on plunging a thermometer in the bed.

The surface of the bed should now be leveled and raked, when it will be ready for the seeds. Early supplies of lettuce, radishes and carrots are readily obtained from such a hotbed, sowing the seeds in lines four inches or thereabouts apart. Onion sets may also be planted, and the radishes and onions, which attain the required proportions in from fifteen to twenty days, and the lines of which being disposed alternately with those of the carrots and lettuce, may be gathered and out of the way when the latter need more space.

Many vegetables and decorative plants required for the garden may be advanced materially by sowing the seeds in a hotbed. Among the former are cabbage, cauliflowers, tomatoes, celery, peppers, beets, etc., and cannas, dahlias, asters, balsams, cosmos, coreopsis, marigolds, petunias, castor oil plants, etc. among flowers. Material raised in this way, and properly hardened off can be transplanted easily in the open garden with less liability of loss than if the plants were brought from a distance.

Care must be taken with the watering and ventilation. It is well to leave some of the sashes slightly open at all times, to permit of the escape of steam, and as the season advances the sashes may be removed altogether on fine mild days. Seedlings in hotbeds require very little water, for the thick mass of manure beneath preserves the soil in a moist condition. But even with this there are times in bright weather when the soil becomes dry and watering necessary, and then it should be applied early on sunny days, giving such ventilation as may be needed to dry the foliage before night comes on.

Spent hotbeds, i. e., those beds in which the manure as a heating medium has become exhausted, are useful for a variety of purposes. In early summer they may be used for cucumbers; in August or September they will prove handy in raising such plants as seedling hollyhocks and pansies; and in winter very good violets can be grown in them. There is thus no season of the year at which a hotbed can not be turned to good account, and one of six lights or sashes should certainly pay for itself the first season.

Illinois,

JOHN REARDON.

Societies.

TREE PLANTING AND LAWN IMPROVEMENT ASSOCIATION, GRAND RAPIDS, MICH.—At a meeting held March 7 this association voted in favor of the half holiday on Arbor Day in order to allow every person in Grand Rapids to put a half day's work on the improvement of their lawns.

WARREN COUNTY HORTICULTURAL SOCIETY, OHIO.—A meeting was held in the mayor's office February 10, President J. T. Mardis in the chair. Dr. G. D. Lind read a paper on "Plants in Warren County and Their Relation to the Citizens." The next meeting will be on the second Thursday in March.

OCEANA COUNTY HORTICULTURAL SOCIETY, MICH.—Mr. H. Meyers read a paper on "Local Yellows" at a meeting held last week. It was decided to ask the Mason County Horticultural Society to what extent the yellows had gained foothold in that county, and what steps had been taken for its eradication.

WAYNE COUNTY HORTICULTURAL SOCIETY, VA.—At the last meeting of the society an able address was given by Dr. Taylor, of Fountain City, embracing a resume of the history of horticulture in this county. The next meeting will be held on the second Saturday in March, when an address will be delivered by Stephen Kuth.

MUSKEGON COUNTY HORTICULTURAL SOCIETY, MICH.—At a recent meeting of this society held in their rooms at the court house, the sugar beet question was brought up and fully discussed. It was decided that the society make a collection of sugar beets for analysis. J. H. Randall, of Norton, gave a talk on "Grape Culture." Mrs. C. S. Tripp spoke on the

"Duties of the Farmer's Wife in Connection with the Farm."

HAMPDEN COUNTY, MASS. HORTICULTURAL SOCIETY.—This society met March 9, and decided to hold a sweet pea exhibition this year, July 20 and 21 being selected as the dates. Preliminary plans for the show were discussed, but no decision was reached as to the place where the show is to be held.

STARK COUNTY HORTICULTURAL SOCIETY, OHIO.—At the last meeting of this society N. E. Moffit read a very able and interesting essay on the production and consumption of the American fruit crop. The secretary was instructed to send a communication to the legislature urging the passage of the bill recently introduced for the purpose of exterminating the San Jose scale.

LEAVENWORTH COUNTY HORTICULTURAL SOCIETY, KAN.—A well-attended meeting was held March 5 at the court house, during the afternoon. Fred Easson, delegate to the State Horticultural Society, submitted his report. This society discussed the question of tree planting and spraying, and upon this subject there appeared to be a diversity of opinion. The next meeting will be held in April, and the subject for discussion will be "Small Fruit Culture."

WINNESHIEK COUNTY HORTICULTURAL SOCIETY, IOWA.—The first regular meeting was held at the court house in Decorah on Saturday, March 12. A cordial invitation was extended to every one in Winneshiek county interested in horticulture and floriculture, and a large and enthusiastic meeting was the result. Papers were read by W. T. Symonds, R. F. Tyler, John Elwick, O. A. Berg, H. A. Bigelow, A. Jacobson and Dr. E. Cartwright. The question box and a general discussion closed the session.

SPRINGFIELD MASS., AMATEUR HORTICULTURAL SOCIETY.—Sweet peas received special attention at the last meeting of this society, held March 4. William J. Eldred and Mr. Brainard each read a paper on this flower, and the Rev. W. T. Hutchins, president of the society, spoke on some novelties in sweet peas for this season. C. M. Hartzell, who is one of the most enthusiastic members of the association, has secured 1500 packages of sweet pea seed from a Philadelphia concern, and they are to be distributed among the school children by the several principals. Mr. Hartzell will offer five prizes for the best displays raised from the seed, the awards to be made at the Mountain Park show. He has placed an order for 117 varieties of sweet peas for his own raising, and he expects to have an exceptionally fine collection this year.

DOUGLAS COUNTY HORTICULTURAL SOCIETY, NEB.—At the last meeting of this society Mr. Peter Youngers, the state superintendent of horticulture, urged Douglas county to make a full display at the exposition to be held this summer, either as an organized effort of the society or in union with the state in the general display. He said that Nebraska must depend largely on Douglas county for the perishable features of the exhibit, such as small fruits, vegetables, etc. The following persons were appointed to take the matter in hand and endeavor to make an artistic display: E. H. Walker, Florence; Otto Barsh, East Omaha; P. P. Meigen, West Omaha; Fred Wholers, Douglas; C. H. Glissman, McArdle; Dr. H. Link, Millard; Robert Douglas, Chicago; O. A. Wolcott, Elkhorn; Charles Grau, Jeffer-

son; F. E. Scott, Union; F. R. Martin, Omaha.

STARTING SPECIMEN CHRYSANTHEMUMS.

Lengthening days remind us that it is time to commence the propagation of chrysanthemums for specimen plants. Varieties for this purpose should be of medium height, and the stems well clad with healthy foliage. The flowers should be erect, fully double, of medium size and distinct color. I make a trial of twenty-five or more new varieties every year, but it is seldom that more than three or four prove suitable for exhibition. Among a list of desirable varieties will be found many old ones. Our stock plants are now in cold frames. By giving them good protection we are enabled to obtain cuttings at any time of nearly all the varieties we wish to grow. Some few, especially those grown as single stemmed specimens, are shy in producing cuttings. These we place in a more genial temperature, our object being to get in our batch as near as we can together. Stock plants which have been kept in a higher temperature than the cold frame continue growing, and in such cases it is better to cut them back than take overgrown cuttings.

Opinions vary as to the proper time to take cuttings. I have been in the habit of inserting them early in January. While this gave a longer season of growth, it often happened that cuttings taken so early ran to bloom prematurely. Some are ruined for the season, and others considerably set back, while a few break again and make good plants. Ivory, Cullingfordii and John Shrimpton have made good plants after breaking into bud early, and pompons are liable to behave in this way. My experience has been that cuttings struck about the middle of February make the best plants, although one lot of prize winners I know of were started in March. Preference should always be given to root cuttings over those growing on the stem. When I find a variety that persistently refuses to make root cuttings, producing only stem cuttings, I shake it out, put it into a smaller pot and grow it directly into a specimen. The only fault I find with such is that they make specimens of too large a size.

Chrysanthemums will root in any temperature above freezing, and in England it is customary in many places to insert them in pots placed in cold frames. By this plan it is claimed the plants are strengthened in constitution, but I am not aware that it makes much difference, especially in a plant that responds to good culture so quickly as does the chrysanthemum. We use an ordinary propagating bed with a bottom heat of about 60°, and a minimum air temperature of 50°. This insures quick rooting, giving us the space for other stock. Cuttings should be prepared with a sharp knife, and shorn of a few of the lower leaves, and the tips of the upper ones, which would otherwise hang about the base of the cuttings and encourage damping. When this takes place it is almost impossible to prevent its spread through the whole bed. They will need a liberal supply of water for the first few days, and thorough shading when the sun shines. They should be rooted in about three weeks and then may be put into small pots, using a rather light compost.

The following list of new varieties are well worth trying as specimens: Mrs. J. Withers, Martin A. Ryerson, West Newton, President Leon Say, J. H. Woodford, Lawn Tennis, Casco and Katherine Leech.

T. D. H.

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TAKE DOWN the rake and the spade—the garden awaits them again.

AN OHIO WRITER on grasses recommends blue grass, red top, fescue and white clover for lawns.

SECURE A SUPPLY of sweet peas before the stocks of the best varieties now in the hands of the seed merchants are exhausted.

THE FORESTRY DIVISION of the U. S. Department of Agriculture will maintain a model forestry plantation on the grounds of the Omaha exposition.

ARBOR DAY should be observed by every owner of a rod of land, and the best way to observe it is by planting trees or shrubs to beautify the earth or to render it more productive.

A CALIFORNIA WRITER has that our domestic figs are not up to the standard in flavor because of the absence in this country of the insect which aids in the pollination of the fig in the old world.

THE PARK SYSTEM of New York City, not including Brooklyn or other adjoining territory, has cost \$50,000,000. In a similar way Brooklyn has invested \$30,000,000; Chicago \$29,561,660; and Boston \$13,747,000.

A MONSTER CHRYSANTHEMUM (plant) is illustrated in the *Gardeners' Chronicle* of March 5. The plant measured five and a half yards across, ten feet through and ix and a half feet high. It was neatly

trained in pyramidal form, and bore 812 flowers averaging eight and a half inches in diameter. This magnificent specimen was grown in the imperial gardens of the Mikado, at Tokio, Japan. The variety is an unnamed one, of a deep rose color, striped with white.

A ROSE EXHIBITION of an unusually extensive character will be held during the coming summer at Frankfort-on-Main, Germany. Opening early in June, it will continue to September, and if the weather proves favorable the time may be extended to October.

HE WAS AN OLD campaigner, now engaged in the peaceful toils of husbandry, who lately remarked that the fruit prospects this year are such that in the event of war with Spain the United States should be able to thrash the Dons with peaches and apples.

LOS ANGELES, CALIFORNIA, can safely lay claim to possessing the largest city park in this country, probably in the world. The new park territory, the gift of Griffith J. Griffith and his wife, covers an area of over 3000 acres, and bears the name of donors.

URCEOCHARIS CLIBRANI, a hybrid of *Eucharis grandiflora* and *Urceolina pendula*, is attracting considerable attention among English horticulturists, and gives promise of becoming a most useful garden plant. The cross was obtained by Messrs. Clibran & Son of Manchester, and was first exhibited in 1892.

PROF. HANSEN, of Brookings, S. Dakota, has returned from a successful trip through Russia, Turkestan, China and Siberia, having been sent there some time ago by Secretary Wilson, in the interest of the Agricultural Department, to collect seeds of plants suitable for the arid regions. The plants will be tested by the experiment stations.

THE VALUE OF FRUITS and nuts imported by the United States in the fiscal year ending June 30, 1897, was \$17,126,932. Plants, trees, shrubs, vines, etc., in the same period cost us \$963,977; seeds \$1,423,926. Our exports under these heads in that year amounted to, respectively, \$7,739,305, \$135,047, and \$6,028,432.

ONE GREAT TROUBLE in marketing fruit is found in the extensive practice by unscrupulous parties of a system of collecting the discarded packages bearing the names and marks of reliable growers, refilling the same with inferior produce. The protection of such packages by the copyright and trade mark laws affords the only way out of this difficulty, and honest growers and packers should at once see to it that their packages are so protected.

WE HAVE RECEIVED a circular from S. A. Forbes, state entomologist of Illinois, warning fruit growers against the danger of importing the San Jose scale into the state with young trees purchased in localities infested with the pest, also calling attention to the necessity for prompt action in the destruction of the scale where it has already made its appearance. Information concerning this insect may be had on application to Mr. Forbes, at Urbana, Ill., or to Dr. F. O. Howard, Department of Agriculture, Washington, D. C.

A NEW WRINKLE in park embellishment has been invented by the authorities of Tacoma, Washington. The plan of the park commissioners is to allot space to any one who will donate \$5 to the park fund. One hundred roses will be planted

in this space, the commissioners securing the roses and taking care of the beds. No one save the donor will be permitted to gather any roses from the plot, and the beds will all be marked with the name of the persons who contributed to the rose fund. It has been decided that the beds shall all be of different shape and size. Some will be heart-shaped, others in crescents, round, oblong, square or of some peculiar design.

AN EXPERT ON FRUIT matters, Prof. G. H. Powell, is authority for the statement that the error is almost universally committed of planting apple trees so close that the branches interlock in a few years. A forest-like apple orchard shuts out the sunlight, keeps the ground damp and in condition to harbor diseases. It hinders the cultivation of the orchard, its spraying, and the gathering and production of fruit. In fact, many old orchards could not be tilled or sprayed until half the trees had been cut out. The experience in the older apple growing regions has shown the practical disadvantage of close setting, and has enforced the conclusion that the spreading kinds of apples should be set not less than forty feet apart each way. Some of the more drooping varieties might be set thirty-five feet apart. Under a system of active cultivation, apple trees become larger and require more room than the same varieties in sod.

LAWNS AND HOW TO TREAT THEM.

This was the subject of an important lecture delivered recently at one of the regular meetings of the Columbus (Ohio) Horticultural Society, by Mr. F. P. Sperry, who spoke as follows:

It would be an improvement if ten out of every twelve flower beds, as now used, were to be obliterated with fresh green grass, and the question is, How can we get it? What is essential to procure a green and beautiful lawn? A good lawn is the foundation upon which to build our landscape garden, and in order that our foundation may be founded on a rock, so to speak, we must not for this purpose look upon grass with an eye of the raiser of stock, where the main consideration is a crop of two or more tons of hay per acre. We must look for those low-growing grasses that form a close, thick, velvety cushion-like rug, whose stems and blades tend to grow upward, and whose nature is to continually fight for life, and thus, as often as cut down, spring up anew, and furnish us with a perpetual verdure, or natural carpet of pleasing green turf. In order that we may have this, we must have a deep soil, well drained, the whole area being thoroughly broken up, plowed, spaded or dug to at least a foot in depth, and preferably two feet. Let every clod be crushed, every stone or stick removed, even as small as a walnut. If the soil is not good, add enough well-rotted barnyard manure to make it good, not rich, for if too strong it would defeat the end in view and make our turf grow too rank and the stalks too coarse.

We use and recommend barnyard manure because it will give us both fertility and humus, which tends to hold moisture as well. Let us here remark, that while we prefer barnyard manure as the best, but on account of its being difficult to procure sometimes, in its absence we would use bone dust and wood ashes in about equal parts, but recommend that they be well worked through the soil. Therefore let the soil be good, not rich, when we want a low growth of fine, soft turf; depth and the power to retain moisture are the qualities needed.

After having thus prepared our foundation, the surface should be made smooth and even by raking, and thoroughly firmed with a heavy roller. We would do this in September or October, if for fall sowing, or March or April if for spring sowing.

We are now ready for the seed. We would sow at the rate of about eighty pounds, or four bushels per acre. As all the grasses suitable for lawns are of light weight, there needs be, from the nature of them, much chaff, which it is impossible to clean out, hence the necessity for so heavy seeding. After sowing, which will have to be done by hand, we would rake lightly and again roll, to bring the soil into close contact with the seed. A lawn prepared in this manner should produce a fair turf in seventy to ninety days and last for years. Some people, after seeding down a piece of lawn expect to see a green mat or turf in two or three weeks. In this they are unreasonable, as the better grasses are slow to produce effect, and when a turf is quickly made, it is at the expense of quality and permanence.

Do not allow anyone to wheedle you into sowing oats or any other coarse rank growing annual with your grass seed with the idea that it will shade it and thus assist it, for a weak growing plant by the side of a strong, rank grower is sure to be starved to death. All the fertility and moisture needs to be conserved for the feeding of our young plants that are intended to remain on the lawn.

In all new lawns we will find annual seeds natural to the soil that are sure to spring up before the young grass plants have had a chance to establish themselves, and the inexperienced are apt to conclude that the obnoxious and troublesome weeds have been in the seed sown. All soils have a great or less amount of this kind of seeds in it and when the soil has been broken up and exposed to sunshine and moisture they are induced to germinate and thrive in their new and well pulverized seed-bed. Frequent cutting and rolling will do much toward holding these in check and if the lawn is judiciously handled and watched the first year, there will be but little trouble afterward from this class of weeds.

There is another class of interlopers, however, which will appear regularly, and they can only be stopped when pasture fields, commons and waste lands cease to exist and when everyone everywhere ceases to allow a weed to run to seed. We have reference to dandelions, plantain, crab grass, nimble will, etc., etc., which are carried from place to place by the wind, on our muddy feet, wagon tires and in numerous other ways. For these an eternal and everlasting war is to be waged would we keep our lawns clean and pure.

Watering or sprinkling the lawn is another question of vital importance. In the care of a lawn much depends on the watering in keeping it in good condition. We should not water as a rule more than once a week, but let that once be a thorough wetting down. The custom of watering every day we believe is the death of more lawns than any one thing practiced. It tends to keep the roots near the surface in place of allowing them to strike deep into the soil. The plants are from this reason easily affected by the hot suns, and as a result rapidly burn out, and as is often the case a lawn thus treated, neglected for a day or two the sod can be rolled up like a sheepskin and the beauty forever lost. We can make moisture and control it, but we cannot make or control the temperature.

While a lawn watered less frequently, but thoroughly, allows its roots to go deep for its moisture and is in this manner fortified against drouth and sudden changes.

Cutting should not be done oftener than once a week and would prefer it once in ten days and then not too close, allowing the grass to remain on the lawn and work its way to the roots of the plant, there forming a mulch for the support and protection of the plants. Especially would we recommend this method toward the latter end of the season. Very close clipping, if the weather is very hot, exposes the plants and in time uses up their vitality.

As to varieties, we would make our native grasses the foundation, such as Kentucky blue grass and red top, mixing such other grasses as experience has proven to suit certain conditions, positions, and uses for which the lawn may be intended. For the inexperienced, we would recommend that they go to some reliable and responsible dealer who has had experience and state the conditions fairly, and be governed largely by their advice, and our word for it, you will not make many mistakes. We would prepare a mixture for lawn tennis courts, croquet grounds, etc., differently than if for a moist, shaded situation, etc., etc. But at all times select such grasses as will not show a spotted, bunchy condition.

The renovating of old lawns is a moot question, and one which has frequently perplexed many of us—it is too good to tear up and make over and too bad to let it go. For such we would recommend as a source of immediate relief that the lawn be most thoroughly raked with a good steel toothed rake cutting as deeply as possible, and then give a sprinkling of nitrate of soda at the rate of 300 or 400 pounds per acre and bone dust at about same rate. Sow liberally while the ground is still fresh with good fresh seed and follow with a roller, or in the absence of a roller, wet down well, and in most cases we can get fair results.

For those who wish to cover the ground quickly, we know of nothing that will give results so quickly as white clover.

For those whose lawns are filled with soil from the cellar and like sources of supply, we predict a hard struggle for a lawn, which can only be overcome by a thorough overhauling, which in the end will be found the cheapest.

Many failures occur in sowing lawn seed from many causes, and a few of them are sowing out of season, poor and unsuitable soil, lack of proper preparation, not seed enough, and very frequently an improper choice of variety and proportions of mixture.

In preparing a lawn for winter, we frequently see them covered with barnyard manure. It is unsightly, unwholesome, unnecessary and unnatural, and the effect desired defeated and overbalanced by the amount of weed seed left on the lawn to haunt and torment you all next season.

Follow nature, which is always safe, and allow the grass to remain on the lawn at the roots of the plants for protection, and if more fertility is needed, supply it in the form of a dressing of bone dust and keep the lawn pure and green.

HILLSDALE-LENAWEE HORTICULTURAL SOCIETY, MICH.—“Good Roads and Free Mail Delivery,” was the chief topic for discussion at the last meeting of this society, which was led by Eli Herrington. Songs and recitations by different members brought the meeting to a close.



HENRY ECKFORD.

WORKERS IN HORTICULTURE. V.

Many of our readers are doubtless familiar with the name of the great sweet pea specialist, Mr. Henry Eckford, whose portrait appears above. He has been a prominent figure in horticulture for a period extending over many years, and it is to his untiring zeal that we are under obligations for most of the grand new types and colors of the modern sweet pea. Although a man of great achievements in his chosen field, Mr. Eckford, personally, is among the most unpretentious of mortals, for the great labor of his life has been one of love rather than gain. Formerly a gardener on an English private estate, he many years ago took up the work of developing certain lines of garden plants, and his success has been most conspicuous with sweet and culinary peas. Mr. Eckford is now well advanced in years and still resides in the midst of his favorites at Wem, Shropshire, enjoying the exercise of that patience, skill and attention which their improvement demands.

Fruits and Vegetables.

A SELECTION OF PEARS.

Among large fruits the pear finds more room accorded it in the gardens of amateurs than any other. It has much to recommend it. In many city gardens where space is circumscribed, the pear just fits the situation. It is not a spreading tree, its growth tending more to an upright form, and for this reason alone it can be given a place which could not be accorded the apple. Its early bearing and the certainty of an annual crop is very much in its favor.

The soil in many gardens is often very rich causing the pear to grow so vigorously that fruiting does not take place for years. A little root pruning will generally throw the tree into bearing, and this may be practiced by those who are impatient. Another plan, and one to be preferred, I think, is to summer prune it. This consists of cutting back some of the young shoots of the season to within a few eyes of their base. This causes the formation of flower buds on

the small spurs in the vicinity of the cut branches, and very often on the branches themselves. It often happens that the mere topping of a growing shoot will cause it to make a flower bud at its apex for the following season. Besides the benefit in this way, summer pruning is the best of all for shaping the tree. When the object of the pruning is to induce the formation of fruit buds, do it when growth is about half accomplished, towards the close of June, say.

Soil and situation plays an important part in the selection of many fruits, but not so much with pears. There are certain kinds esteemed as of the best from the Atlantic to the Pacific varying but little in quality no matter where planted. The most marked difference is in the season of maturity; what is a summer pear in the far northern states becomes an autumn one a little further south. Thus the indispensable Anjou, an early winter pear in New York, is an autumn one in Delaware.

Were I asked for a list of a dozen excellent standard pears for an amateur's garden, I would present the following list, named in the order I have found them to ripen: Clapp's Favorite, Bartlett, Howell, Seckel, Lucrative, Superfin, Sheldon, Kieffer, Clairgeau, Anjou, Lawrence and Josephine de Malines. I would say in regard to Kieffer that I place it on the list because of its value for cooking and preserving. I have not found its flavor to my liking, but many persons aver with candor that its quality pleases them very much.

Although many standard pears, notably Bartlett, Clapp's Favorite and Howell will commence bearing when but three or four years old, dwarfs are thought desirable in many gardens. They commence to bear at once, and if planted below where the stock and the cion unite, roots will be emitted from the pear itself in time, which will make them

longer lived than if the quince alone was depended on. A few good sorts which have been found adapted to dwarf culture are the following, listed somewhat as they ripen. Clapp's Favorite, Brandywine, Bartlett, Howell, Superfin, Lucrative, Angouleme, Louise Bonne, Anjou, Lawrence, and Josephine.

Standard pears thrive well in deep, heavy, good soil. Dwarfs do not like it

heavy. A lighter, but moist and rich composition, is what they delight in.

Philadelphia. JOSEPH MEEHAN.

STARTING CELERY PLANTS.

Celery seed, says Prof. Munson in a recent bulletin of the Maine Agricultural Experiment Station, is at best uncertain in its germinative power, and unless the conditions are suitable the percentage of germination is usually very low. In general we may count on from 5000 to 10,000 plants from an ounce of seed.

For early celery the seed is sown in a mild hotbed or in flats in the greenhouse about March 1 to 15. For the home garden, if no hotbed is handy, seed may be sown in rich, sandy soil in a shallow box and placed in the kitchen window.

In any case, cover the seed very lightly, not more than one-sixteenth of an inch, and keep the soil moderately moist but not wet. Many practice covering the surface with paper or with boards till the seeds begin to sprout. It is also well to soak the seeds in warm water for a few hours before sowing. There is little doubt that as a rule better results will be obtained in germinating most vegetable seeds if the soil is kept only moderately wet. Seeds must have air as well as moisture in order to germinate.

As the young plants begin to develop transplant them into rows three inches apart, leaving about a half-inch space between the plants. In case some of the plants become too large before the ground is suitable for setting them in the field, they may be sheared back without harm. The process of "hardening off" should of course be observed. By this we mean that the plants should gradually be made accustomed to lower temperature before removal to the field.

For the main crop the seed is sown out of doors from the middle of April to the first of June. In this case a sheltered location is chosen. A fine seed-bed is prepared and the seed sown broadcast and lightly



THE SECKEL PEAR.



THE KIEFFER PEAR.

raked in, or sown thinly in drills and simply rolled. It is well then to provide a screen of lath or brush to protect the young plants and prevent destruction of the seed. If the plants are thinned somewhat in weeding, and are sheared back as they begin to grow too large, transplanting may sometimes be dispensed with, but the plants are better if handled once as described above.

If only a few hundred plants are to be grown, they may be bought cheaper than they can be raised, but if a large number are required the plants should be home-grown.

TOMATOES UNDER GLASS.

In GARDENING of March 1, A. T. Jordan takes exception to my statement that plants trained to three stems will produce nearly double the quantity of fruit of those trained to a single stem, and goes on to argue that the latter system will give more fruit, area for area, than my method, quoting the New York Experiment Station as having obtained four ounces more fruit per square foot of bench space from single stem plants than from the three stem ones.

I have made a special study of tomato forcing for a number of years and have given both systems very careful tests, the conclusion being that the three stem system will yield nearly or quite double the quantity and weight of fruit produced by the single stem plants. I usually allow six bunches to the main stem and from three to four bunches to each lateral, occasionally more. In my article it was not claimed that the three stem system would give more fruit, area for area, but if I were growing tomatoes for commercial purposes, I would not grow any on single stems. The foliage is so gross that two plants grown on the single stem system will require as much space as one three stemmed specimen. I am by no means disposed to accept the conclusions of the New York Experiment Station or any other station as "quite conclusive." I would rather take the opinion of men who have been in the tomato business commercially for many years as a guide, and the most successful growers in this section, some of whom have been in the business a quarter of a century, find that the three stem system nets them the most money. Last year I grew twenty plants of Eclipse tomatoes in 10-inch pots, three stems to a plant. These averaged sixty-two fruits per plant, all excellent samples. The bench they stood on was twenty-seven feet long, which did not allow eighteen inches space between the plants. I could not have averaged near so many from single stem plants.

Differences of opinion are likely to continue as to which method is the most profitable, and I would advise intending growers to try both before accepting any system as the best. Much depends on the varieties experimented with. Most of our American raised tomatoes are poorly adapted for forcing purposes except it be for a spring or early summer crop. Notable exceptions are Early Essex, Nicholson's Hybrid, Ignatum, Lorillard and May's Favorite, and some of these are poor winter varieties. Chemin, which Mr. Jordan refers to as of no value, sets very freely, but is too open-celled, or hollow; its three-cornered form also is against it. I discarded this sort several years ago. Eclipse and Frogmore Prolific are great advances over Chemin and in my opinion are the two best forcing sorts on the market.

Taunton, Mass.

W. N. CRAIG.

A MEETING was held at the court house, Chillicothe, Ohio, on Saturday, March 5, 1898, for the purpose of organizing a county horticultural society. The object of the meeting was to build up the home and foreign markets and protect the fruit growers from many swindlers who impose upon them.

SPOKANE FLORAL ASSOCIATION.—At a meeting held February 14, the following officers were elected: President, Mrs. Ida M. Pfle; vice-president, Mrs. Magie; recording secretary, Mrs. Kratzer; corresponding secretary, Mrs. Kellam; auditor, Mrs. Brinkerhoff; treasurer, Mrs. Drake Mrs. Stewart, Mrs. Pelikan and Mrs. Henley were appointed directors.

CLINTON COUNTY AGRICULTURAL SOCIETY.—The regular annual meeting of this society was held at the court house last week and was largely attended by members from St. Johns and the various sections of the county, and everything was most harmonious. The meeting was called to order by President Swigart, who called Mr. Teater, of Duplain, to the chair. Treasurer Ferry read a very satisfactory report. The election of officers resulted as follows: President, R. M. Swigart, St. Johns; secretary, Murrett Frink, Bengal; treasurer, Geo. N. Ferry, Greenbush; directors, Wm. Byrne, Bengal, Wm. Ennest, Olive, G. W. Taft, Ovid, H. N. Carpenter, Bengal.

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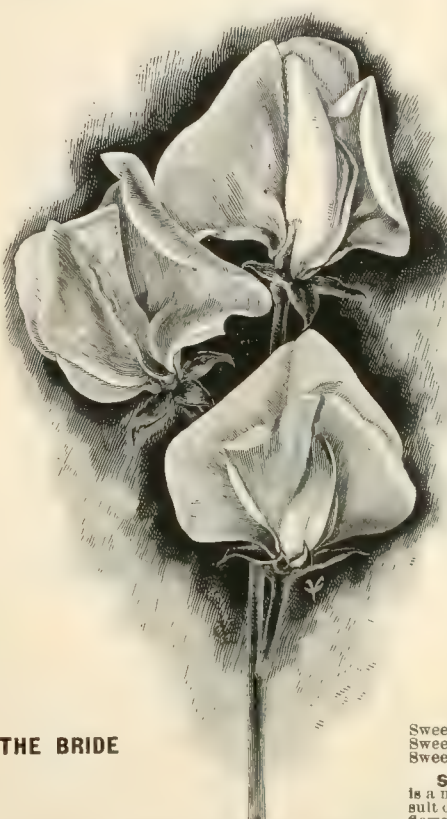
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J. H. Hale, South Glastonbury, Conn., fruits; Geo. A. Sweet Nursery Co., Danville, N. Y., fruits; Barteldes & Co., Denver, Colo., seeds; Winthrop Gardens, Holliston, Mass., trees, shrubs and fruits; J. E. Wilson, Chitwood, Oregon, trees and shrubs; Wm. C. Babcock, Bridgman, Mich., fruits and plants; A. Lingham, Dungeness, Washington, seeds; John R. Childers, South Carrollton, Ky., fruits; Maud M. Briggs, El Paso, Texas, cacti; C. Jagd, Valley City, N. D., trees, shrubs and fruits; H. R. Cotta, Freeport Ill., fruits; McGeehon Nursery, Atlantic, Iowa, fruits; S. J. Baldwin, Seneca, Kan., trees, shrubs and fruits; J. M. Russell & Co., Wymore, Neb., fruits; Evergreen Nursery Co., Evergreen, Wis., trees and shrubs; F. H. Ebeling, Syracuse, N. Y., seeds; Nathan Smith & Son, Adrian, Mich., plants; W. A. Manda, South Orange, N. J., seeds and plants; A. C. Anderson, Leigh, Neb., seeds and plants; J. M. T. Wright, Portland, Ind., fruits; Michigan Wild Flower Co., Rochester, Mich., plants; W. P. Peacock, Atco, N. J., plants; J. C. Plumb & Son, Milton, Wis., trees, shrubs and fruits; M. Keppler, Queens, N. Y., seeds; Geo. Pattington & Sons, Scipioville, N. Y., trees, shrubs and fruits; Horace Janney, Newton, Mo., trees, shrubs and fruits; S. C. DeCou, Moorestown, N. J., fruits; C. G. Nanz, Owensboro, Ky., plants; R. Johnston, Shortsville, N. Y., fruits; A. N. Jones, Newark, N. Y., seeds; Charles Black, Hightstown, N. J., fruits; H. Shroeder, Bloomington, Ill., fruits; E. Y. Teas, Irvington, Ind., trees, shrubs and fruits; B. J. Wakeman, Chebanse, Ill., trees, shrubs and fruits; John W. Hall, Marion Station, Md., fruits; Frost & Co., Rochester, N. Y., trees and shrubs; Fred W. Kelsey, New York, trees, shrubs and fruits; Alton M. Shepherd, Minneapolis, Minn., fruits; Geo. A. Schultz, Jamesburg, N. J., fruits; G. R. Gause, & Co., Richmond, Ind., plants; Theo. Koss, Milwaukee, Wis., seeds; T. S. Hubbard Co., Fredonia, N. Y., fruits; D. Hill, Dundee, Ill., trees and shrubs; Thos. Mehan & Sons, Philadelphia, Pa., trees and shrubs; A. Ries, Carroll, Iowa, plants; H. C. Faust & Co., Philadelphia, Pa., seeds; S. C. Hall, Cherry Valley, Ill., trees, shrubs and fruits; Sunset Seed and Plant Co., San Francisco, Cal., plants; T. C. Thurlow, West Newbury, Mass., plants; H. N. Smith, South Sudbury, Mass., seeds; Harlan P. Kelsey, Boston, Mass., plants; M. Butterfield, Lee's Summit, Mo., trees, shrubs and fruits; Joseph Brown, Nashville, Tenn., plants; Elizabeth Nursery Co., Elizabeth, N. J., trees, shrubs and fruits; Charles Fremd, Rye, N. Y., trees and plants; F. H. Horsford, Charlotte, Vt., trees, shrubs and plants; Chas. B. Hornor & Son, Mount Holly, N. J., trees, shrubs and fruits; John R. & Wm. Parry, Parry, N. J., trees, shrubs and fruits; Chas. Wright, Seaford, Del., fruits; Phoenix Nursery Co., Bloomington, Ill., trees, shrubs and fruits; A. L. Mitchell, Denver, Colo., seeds; V. Lemoine, Nancy, France, plants; Vilmorin-Andrieux & Co., Paris, France, plants; Wilhelm Muhle, Temesvar, Hungary, seeds; Henry W. Gibbons, New York, N. Y., heating apparatus; Dingee & Conard Co., West Grove, Pa., plants, seeds and bulbs; Pinehurst Nurseries, Pinehurst, N. C., plants; Wood Bros., Fishkill, N. Y., plants; J. Chas. McCullough, Cincinnati, O., seeds, bulbs and plants; Geo. Hancock & Son, Grand Haven, Mich., plants; H. Weber & Sons, Oakland, Md., plants; Vick & Hill Co., Rochester, N. Y., plants; Dan'l B. Long, Buffalo, N. Y., plants; Wm. F. Kast- ing, Buffalo, N. Y., florists' supplies.

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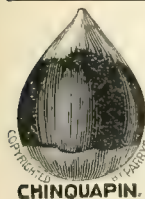
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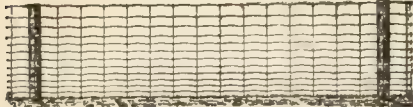
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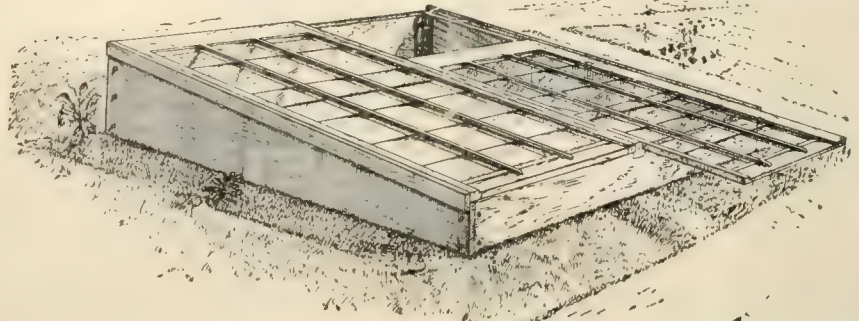
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THE TIME OF BLOSSOMS IN JAPAN

Trees and Shrubs.

TREE PLANTING.

In sections of the country where the soil is clayey and compacted or where the winters are severe, I consider spring the most favorable period in which to plant trees, shrubs and perennials. Planting on banks, or in any especially well drained position, may be an exception unless in the case of a few deciduous species and evergreens. The latter, in our climate, should never be planted in the fall. There have been discussions on this point in *GARDENING*, even the late Robt. Douglas (the best authority on evergreens then living) joining, the verdict being that while they might be moved carefully on one's own grounds early in the fall, it was best not to at-

tempt the planting of those that had to be shipped from a distance. In the milder climate of the eastern coast fall planting is a success.

The success of planting depends more upon the planter than upon the nurseryman who sends out the stock, and who is often blamed for failures. It is best not to bring home a new horse until you have built the barn, and it is always best to have your tree holes ready by the time the stock arrives. The words "tree holes" should be obliterated from the vocabulary of garden terms. We should say that we are preparing a home for the tree, as that is what we are really doing. I have seen tree holes in a heavy clay soil that were nothing more than slightly enlarged post holes, in which some species might live, but they certainly would not thrive there. One dislikes seeing a half-

starved animal in one's possession, and should dislike seeing a half-starved tree. In making the home for the tree, if the soil is compacted and poor—not rich prairie loam—dig out a space fully five feet in diameter and two deep—deeper and wider would be better—and fill in with good soil. Not soil over-enriched with manure, especially if fresh, which is positively injurious to newly cut roots.

The growth of recently planted trees is somewhat like the recovery of a convalescent patient, to whom too rich a food is dangerous. If one had cut some sod from the roadside or pasture last fall and piled it up over winter it would be ideal soil for almost any planting. When filling the excavation let the soil rise fully four inches higher than the surrounding sod to allow for settling. It is well, if you expect a rainy season, or if the situation

is inclined to be wet, to dig out the new soil again and pile it up alongside in order that it may be dry and friable when the tree is planted. If a number of excavations are made, all of the same size, the number of wheelbarrows of soil required to fill the first one may be ascertained, and a similar number piled up at the others. In the fall I generally sift through a coarse mason's gravel sifter a few barrels of good soil when it is dry, and put it under cover. This I can use to work in among the fine roots in spring planting if the regular soil is too wet. See that the drainage is good. If your grounds are not tile-drained, or you have reason to believe the situation is too retentive, dig a foot deeper and fill in at the bottom for ten to twelve inches with broken brick, or any rough material of like nature, and place an inverted sod over it before filling in the soil. If the place is quite wet, and you are not planting a swamp loving tree, excavate one foot deep, fill up to the former level, and plant your tree on top and then mound up one foot or more over the roots with good soil, extending the mound five to six feet in diameter. In this case the roots will seek that soil, above or below, most suited to its wants.

When your trees arrive unpack and check off the items from the bill. If all agree, and you have reason to believe the goods are as ordered, remit promptly that the nurseryman may be as happy as you expect to be with your new possessions. If they have been delayed in transit and look dry and shriveled (this does not apply to evergreens), dig trenches in the soil and bury them one at a time, roots, branches and all, and let them remain four or five days, when the chances are that they will plump up, but on account of the check they have received they will require closer cutting back. Should they have become frozen place them, box or bale and all, in some dark cool place to thaw out. These two mishaps seldom occur. Even if ready to plant, it is well to heel them in at once, unless there are but two or three to set out. Unoccupied flower or vegetable beds are available, if not take the soil at the last few holes to plant, and placing the trees in a slanting position, cover the roots, breaking it up as finely as you can, especially if they are to remain there some days. If there are quite a number to plant it is well to take a tub half full of water to which soil, preferably of a clayey, adhesive nature, has been added and stirred up until the mixture or "puddle" is of the consistency of a thick gruel. Before taking a tree to its future home dip the roots in this puddle, not taking more than two trees away at a time. A large piece of burlap or an old blanket thoroughly wet should be taken along and thrown over the roots of the second tree while the first is being planted. The hot sun and drying winds are sources of danger to be avoided. With a sharp knife cut off the ends of all broken or damaged roots, starting the cut from the under side and making it smooth and clean. Have a straight stick some seven feet long, and with it measure what might be termed the depth of the roots, so as to enable you to know how much to fill in before setting in the tree. Mound up the soil in the center of the bottom of the hole to such a height that when the tree rests upon it the straight stick (being laid on the ground across the hole) will pass the trunk at the point where it left the surface of the ground when in the nursery. The trunk is generally darker in color where originally covered by the soil. This mound should be slightly firmed or tamped by the foot

before the tree is placed on it. In this section I have noticed that most planted trees in the open, and generally the native ones not surrounded, are much heavier in branches on the eastern and southeastern sides, whether on account of the stronger northwestern winds or the influence of the sun I can not tell, but in planting I generally put the best side to the west, as the eastern side will in time catch up and equalize the head.

Unless the trees are quite small a strong stake should be provided to which they should be fastened to prevent the swaying by heavy winds from tearing and injuring the tender newly-formed roots soon to be expected. When your tree is set in place, and before filling in any soil over the roots, drive in the stake where it will not injure the roots, and as close up to the trunk as you can get it. If your stakes are not ready drive in any short stake, merely to mark a spot where afterwards the proper one may be driven without injury. When you tie the tree to these stakes cut an old garden hose into pieces six to ten inches long and pass a strong cord through them. The ends of the hose should extend, when placed around the tree, a couple of inches. Cross these ends and tie to the stake, the ends will partially surround the stake, and the soft rubber prevents chafing. If on account of the trunk or stake being crooked they touch each other at any point below split a piece of hose and encircle the stake, wiring it on strongly above and below, the point of adhesion. We have now reached a critical point in the operation. To plant properly trees of any size it is best to have two persons in attendance. One at first holds the tree in proper position while some soil is being thrown in. The soil should be quite friable if sticky and adhering to the spade it is too wet. All soil in contact with the roots should be pulverized, so that when pressed down there will be no portion of the roots that is not in close contact with it. Spread the roots out as evenly as possible, if in several tiers the lower ones first, and fill in with fine soil. When they are covered a few inches pound down with the fists or even with a rammer, and work the soil in under the center; spread out the next tier and proceed as before. Some plant a little low at first and lift the tree up gently, shaking slightly so as to settle the soil around the roots. Do not fill in too rapidly or you cannot pack the soil sufficiently tight. When the roots are fairly well covered you may water quite freely and go on to the next tree, afterwards finishing the filling in. You may put in some rotted manure in the top one foot of filling, along the outer edge, where the roots may reach it late in the season or the following year. Unless the soil is very dry, the watering may be omitted if the soil is well pressed in among the roots.

The tree may be pruned at this stage, or before planting. More amateurs fail on this point than on any other. They see the nicely formed head, and dislike to disturb it; but if one stops to think a moment common sense will prevail. No tree was ever lazy; it will always maintain as much of a head as the feeding capacity of its roots warrant. Had a newly planted tree remained in the nursery it would not only have sustained all of its branches, but increased them. But what has happened? It has been torn from its established home, its feeding roots bruised, cut and destroyed, and like a fish out of water it has been out of its element for some time during transit. Fortunately nature has stored up enough

sap in the trunk to start the leaves into action without the aid of moisture from the roots. If too many leaf buds are left on to swell and develop they exhaust the reserve sap before new roots can be formed that will draw moisture and food from the soil and renew it, and the tree dies, or, if it lives, it is weak and sickly, a prey to disease and insect enemies. It is hard to say just how much a tree should be cut back; some require a more severe trimming than others. The oak, hickory, chestnut, tulip tree and many others require close pruning, while the willows and poplars are safe with less. Most catalogues state what varieties require a vigorous pruning. As a rule a tree loses fifty per cent of its feeding roots, and consequently should have more than fifty per cent of the head removed. Evergreens having fibrous roots, generally clustered near the trunk, can be taken up with less loss of root power than deciduous trees, and are seldom pruned when transplanted, but their roots are very sensitive to exposure to sun and winds. Wet cloths kept over the roots at time of planting are of great assistance. A summer mulch of any light, strawy material, cuttings from the lawn, etc., are helpful, but better still is a constant cultivation of the soil. W. C. EGAN.

Highland Park, Ill.

NOTES ON OAKS.

I can fully endorse what Mr. Wyman says of the beauty of *Quercus macrocarpa*, the bur oak, in a recent issue of GARDENING, and I would add that I think it more attractive in the winter season than in summer, for then it is that the beauty of its corky branches is best displayed.

It may not be well known that acorns from these corky bur oaks are not to be relied on for producing the like. Acorns from the corkiest bur oak to be found will produce seedlings of varying corkiness, down to some with no sign of corky branches. And the same diversity exists in the acorn and cup. Some trees bear immense sized acorns in cups as "mossy" as can be, others have the cups hardly fringed at all; and there will be trees with acorns almost hidden by their cups, and some with cups so shallow as to expose the greater part of the nut. Seedlings soon show their character as regards corkiness, and those with the corky branches should be selected as the most desirable.

It is a great pleasure to recognize the general desire to plant oak trees which is so much in evidence of late. Parks and cemeteries, as well as private gardens, have been introducing them within the past few years to an extent that seemed hardly possible some years ago. Certainly there are no trees better adapted for the purpose. The large growth of most of them as well as the lovely fall foliage so many display, enhance their value. The scarlet oak, *Quercus coccinea*; the red, *Q. rubra*, and the pin, *Q. palustris*, are the best for fall coloring.

Beautiful as these oaks are I have found many persons who dearly love the English oak, *Q. robur*, and the Turkey, *Q. cerris*, because of the green foliage they display right up to the time freezing weather comes. Amid the many native kinds changing their foliage to autumnal tints the green of these foreign ones adds charm to the whole. The English does not grow into the tall tree the most of the native sorts do. In its home it makes a large, round-headed specimen, such as is shown in the illustration presented, which is from a photograph of a tree in Nunwell

Park, in the south of England. What a beautiful tree it is, and what an age it must be for "the slow growth of an oak" is correct when an oak in England is referred to, but not when our native ones are in mind. The illustration undoubtedly represents a tree many hundred years old; and one can imagine the imposing appearance such a tree presents when in full display of foliage.

So much has been said of the slow growth of the oak, founded on the traditions of Europe, that it universally excites surprise in a person to be told that our oaks grow as fast as the average of native tree. Yet they certainly do grow as rapidly. Repeated plantings of oaks with other trees, sometimes on purpose to test the matter, have demonstrated that they are by no means slow growing.

One of the best times to plant oak trees is in early spring, just as early as can be after the season permits. When planted at this time, with the usual care all trees demand, and a severe pruning, they rarely fail. Young trees of a size not over six to eight feet are very good ones for transplanting, but even a less size is better. A tree of this size, six feet, should have its side branches cut away almost entirely, leaving but little more than a stick, but do not cut off the leader. One need not hesitate to trim it in this way. When young, as such trees are, they push out afresh from the main stem better I think than before, and in a short time make nice trees.

Two species are exceptions to the necessity to prune so severely, the pin oak, *Q. palustris*, and the swamp white oak, *Q. bicolor*. These two are naturally fairly supplied with small roots, and always sustain transplanting with more ease than any other sort. Even when of large size and when having been but seldom transplanted they succeed very well with but moderate pruning.

Before closing I would like to make mention of some little bush oaks which give much pleasure to many because of seeing mere bushes bearing acorns. There are three, *Q. prinoides*, *Q. ilicifolia* and *Q. nigra*. The first and second are generally known, but the dwarf *Q. nigra* is not in cultivation that I know of. Yet it certainly exists, as I have seen them in the

wilds of southern New Jersey, little fellows some of them no more than two feet high bearing acorns well displayed among their large shining leaves.

Philadelphia. JOSEPH MEEHAN.

THE WITCH HAZELS.

One of our good native shrubs and yet one of the more curious in regard to its flowering is the witch hazel, *Hamamelis Virginica*. Instead of throwing out its colors in spring or summer as most plants do, it waits until late in the autumn when the cold season begins. Then it covers its branches with its strap-shaped yellow petals. Untroubled by the storms of winter it waits until summer before it develops its fruit, a capsule, which is familiar to us after it has forcibly spread its tip into two parts to eject its seed.

The shrub itself is very common in our woods. Not conspicuous, it is one of the more attractive shrubs and trees which make up the underbrush. It has not the compactness of habit which adapts it to wide use in ornamental planting, but in places where a shade-enduring shrub is wanted or only a thin cover is desired it has its use. It is valuable, too, for the size and cleanliness of its leaves, though from its coarseness it is not adapted to planting in close proximity to the house. As a single specimen it is often agreeable but more attractive in masses, and then particularly for the brilliancy of its autumnal color, which is of a fine shade of yellow. There are two other species of hamamelis, both of them Japanese.

A. P. WYMAN.

The Japan witch hazel (*Hamamelis Japonica*) has been in bloom since the latter part of February, but is still in perfect condition; its flowers are decidedly ornamental and not to be compared with those of the native *H. Virginica*, which come out in late autumn when the foliage is about ready to fall; they are much larger, the narrow twisted petals being three-fourths of an inch in length, bright yellow, while the base or rather the calyx is of a glossy bronze color; they are borne in axillary, short-stemmed clusters on the youngest wood and appear from a little distance to be much larger than they

really are, because three to five of them are generally in the cluster and the petals are so spreading. We have had several sharp frosts since it first came in bloom, but none of the flowers seem to be damaged in the least.

J. B. K.
Rochester, N. Y.

BECHTEL'S DOUBLE FLOWERING CRAB.

Now and then some new shrub or tree is discovered and introduced to our gardens that marks an epoch in the general advancement of floriculture. The *Hydrangea paniculata grandiflora* and *Rosa rugosa*, among shrubs, the Crimson Rambler, *Rosa Wichuriana* and the hybrid sweetbriars, among climbing and creeping roses and the *Clematis paniculata* among vines are notable instances. These have become standard and are essential occupants of all gardens of any pretensions. They possess the necessary qualifications of hardiness and adaptability to the ordinary methods of culture. Lately there has been introduced an admirable addition to the list of flowering trees that is an acquisition of unusual and decided merit. This is Bechtel's double flowering crab a form of *Pyrus angustifolia* of which Prof. Asa Gray says, "Perhaps a variety of *P. coronaria*." The latter is commonly known as the American crab-apple, whose delightful fragrance when in bloom is familiar to all. The doubling of its flowers has produced a bloom so closely resembling a miniature rose that I had one gentleman who is quite well informed ask me "How did you graft that rose on a thorn?" It not only retains the fragrance of the type, but seems to bloom when much younger. It accommodates itself, evidently, to all situations. I have it growing on the level lawn in full sun, and on dry banks in partial shade. It withstood a temperature of 25° below zero, and bloomed freely the following spring, whereas all the flower buds of the Japanese plums and apples were killed.

Before many years this tree will be as it should, widely distributed, and thinking that a history of its introduction might be of interest, I wrote to Theo. Bechtel, of Staunton, Ill., for particulars, who kindly replied: "Sometime in the seventies when my father, the late E. A. Bechtel was conducting a little nursery four miles west of Staunton, Ill., we used to hear most wonderful tales of a flowering tree or clump of trees situated some six or eight miles northeast of us in what was known as 'Upper West Prairie,' but as the wild tales were too much to be believed, coming from a class of old settlers we knew to be given to exaggeration, we paid no attention to the matter until about ten years ago, when we made a trip during the blooming season and saw what a valuable thing had stood there, as near as we could find out from old settlers, about forty years without being brought to public notice. We at once made arrangements with Mr. Woolridge, in whose pasture the original clump of trees were standing, to propagate and introduce it to the trade. As the trees were identical with the single flowered wild crab growing around and in the same clump, we had to mark these during blossoming time so not to make any mistake in procuring buds or scions. The indications all go to show that it is an accidental sport from the single flowering wild crab."

During the interval between its discovery and the present time it has been increased by means of grafting and budding on stocks of the single form, until now good trees may be had of most of our leading nurserymen. Caution should



THE ENGLISH OAK.

be used by purchasing only of reliable firms as it is not to be distinguished from the single flowered form except when in bloom.

W. C. EGAN.

THE WHITE OAK.

The accompanying illustration shows the dead trunk and branches of a fine specimen of this tree which, a few years ago, stood in one of the avenues of Flushing, N. Y. The tree was spared when the street was opened, but died soon after, and later it was removed altogether.

Dr. J. W. Barstow, in writing of the trees of Flushing in 1893, made the following interesting statement concerning this oak: "This grand old veteran was critically examined in 1872 by the late Prof. Asa Gray, who then estimated its age to be 640 years. If Dr. Gray's great experience in such estimates may be accepted as reliable, then the acorn from which sprang our venerable friend was dropped in the reign of Henry III, of England, about a score of years after King John met the barons at Runnymede and signed the Magna Charta of England's liberties."

The dimensions of the tree were as follows: Girth, 3 feet from the ground, 15 feet 5 inches; at 1 foot from the ground, 19 feet 4 inches; estimated height, 70 feet.

The Greenhouse.

CYCLAMENS.

The authorities tell us that all the varieties of cyclamen now in common cultivation have come from one species *C. Persicum*. Considering the number of recognized species and the similarity that exists in them, this statement seems strange, especially when we examine the great range in form and color to be seen in any good collection. Be that as it may, it is certain that we now have several distinct strains in cultivation, and very few growers would now be satisfied with the type of *C. Persicum* common in our greenhouses twenty years ago.

Taking foliage and flower, form and habit into consideration, probably some of the white varieties, Mont Blanc, for instance, are the most perfect cyclamens grown at the present day. Following the white very closely come the white with crimson eye, the new rose colors, and the purple and magenta tints. For freedom of bloom none surpass the dark red varieties of which Blood Red and Brilliant may be taken as types. But these varieties are not up to the standard in size of flower, nor is the foliage as good as in the lighter colored forms. The color, however, is like charity.

Cyclamen seed can now be bought in at least fifteen distinct varieties, not including the double, fringed and crested sorts.

To grow good cyclamens is not a difficult matter. There is no secret about it. One must simply do the proper thing at the proper time. Cyclamens will not stand checks very well at any stage of their existence, and must be kept growing from start to finish—a plant once stunted might as well be dumped.

It is a mistake to start with anything but fresh plump seed—the larger the better—for the larger the seed the more food there is, and the more rapid is its germination and subsequent development. The plant from the largest seed will maintain its superiority throughout the season. All varieties do not produce seeds of the same size, there being a marked difference in

this respect between different colors and strains. Get the heaviest seed possible and sow it in flats of carefully prepared soil, placing the seeds an inch apart, and covering a quarter of an inch deep. The best soil for them to germinate in is one composed of at least one-half leaf mold, and when I say leaf mold I do not mean swamp mud or Irish peat, but partly rotted leaves rubbed through a sieve with a quarter-inch mesh. Such a soil will retain moisture without becoming too wet, is not liable to get covered with fungi, and will furnish excellent conditions for the young roots. Remember that it may be three months before your seedlings will be potted off. Water carefully and

in the seed pans, except that a little bone meal may be added. Place near the glass again and maintain a temperature of from 65° to 70°. If they have been properly handled they will need no shade, in this latitude, and should be syringed several times a day on bright days.

From this time on they will need a shift about every two months, increasing the strength of the compost every time. A little bottom heat after every shift is advantageous to stimulate root action. Expose to full sun and keep the foliage cool by frequent syringings.

About the middle of May, when they should be in 3 or 3½-inch pots, place them outside on a very mild hot-bed.



THE WHITE OAK.

do not let the seeds get dry at any time. As soon as the seeds begin to germinate place your seed pans near the glass and in an even temperature. About 65° is the proper figure, but 70° will not hurt them if they have all the light there is.

If wanted in flower for the holidays, the seed should be sown about October 1. If sown at that time they will be fit to pot off early in January; or if desired they may be pricked off into flats. I prefer the former method, however, using 1½ or 2-inch pots. Even in these small pots we find it advantageous to use finely broken crocks for drainage. Use about the same soil as

These frames will need no sides, but some arrangement should be made to carry shades of plant bed cloth, which will be needed at night during May, and for a few hours during the hottest summer days, and in case of heavy rain.

By August you can begin shifting into 5-inch pots and by September buds will begin to show. When the dewy nights come on the plants will grow very rapidly, and will need no cover either night or day until there is danger of frost.

Expose to the full sun as much as possible—if the foliage begins to feel hot, syringe. The sun will do them good; it will



ripen up the corms, encourage the formation of flower buds and keep the plants short and sturdy. As soon as the 5-inch pots fill with roots, shift into flowering pots and remove to a light airy house. Be very careful now that water does not accumulate on the crowns or the flower buds will damp off. If wanted for the November shows, give them plenty of room and a temperature of 70°. Before placing on the bench the plants may be dipped in a good strong solution of tobacco, one part of tobacco extract to fifty of water. By Christmas plants treated as above should be in prime condition, though of course they will not show as many open flowers as they will a few weeks later.

For Easter flowering the seed may be sown in February or March, as the spring sun brings the young seedlings on much faster than in the late fall.

There are other ways of growing cyclamens, ways followed by very successful growers, but we grow ours as above, and so of course think it the best.

Some growers use a great deal more shade than we do, and probably give a much higher night temperature in early fall. They get immense foliage, but I think, sacrifice flower. Neither do I think leaves five or more inches across desirable, especially as these gigantic leaves are usually followed by a crop of much smaller ones, which come with the flowers and destroy the symmetry essential to a well grown specimen.

J. F. COWELL.

Buffalo Botanic Garden.

BEGONIA CORONATA.

This is a tall, strong, robust growing variety, the stems growing five feet two inches high within fourteen months, from cuttings. The stems branch very little, unless pinched back. It sends up numerous flowers on erect peduncles, the clusters being nearly evenly cymose, of about fifty male flowers on a truss and nearly as many females. The trusses when cut last a long time in perfection. It requires plenty of room to grow it well. It is said to have been raised by V. Lemoine, France, and is described in his catalogue No. 124 of 1893, as a novelty, and is a cross between *B. carolinæfolia* and *B. polyantha*. The stems are stout, upright, fleshy, nodose, green when young, russety brown when old, bearing viviparous buds when young, and covered with a russety brown tomentum. Petioles seven inches long, green, red at the apex and covered with tomentum. Leaves ten inches wide by fourteen and one-half inches long, dark green, intermingled with a yellowish green, glossy, slightly hairy on the midribs. Under surface light green and hairy on the midribs and veins. Peduncles

eight inches long, reddish. Flowers one and one-eighth inches across. Males dipetalous. Females with two, three, four and five divisions. Color a beautiful rose.

JOHN COULSON.

FURTHER NOTES ON SUB-WATERING.

When the philosophy of sub-watering is once stated it seems simple enough. Evidently all that is directly required is to introduce the supply of water intended for the plant into the soil from beneath, and let it ascend by capillary movement to supply the feeding roots.

In arranging to carry out this method in practice there are two or three conditions of great collateral importance, which must receive due weight, or a full measure of success is out of the question. Most cultural results can be attained by various procedures, so long as the principle at stake is not violated, and sub-watering is no exception. The writer has used two methods for supplying water beneath the soil, one of which was discarded as deficient and the other remains and gives satisfaction. Other experiment-

ers have used other methods, partly with and partly without good results.

The conditions, which seem to me pre-requisites to success, are (1) the ready distribution of water over the whole bottom of the bench, (2) a free circulation of air through the bottom layers, and (3) the employment of material that will remain porous and efficient. The use of a water-tight bottom I do not consider essential, but I believe the careful, economical and thrifty grower will come as near to water-tight benches as he can secure.

The permeable sub-layer of non-compressible material permits water to distribute itself evenly throughout the whole bench almost as soon as it is applied; and the flow of the water does not clog up the passage ways, for there is no fine or dissolvable material present. This layer of inert substance, which makes it possible quickly to spread an even sheet of water over the bottom of the bed, should be thick enough so that no liquid water can come in contact with the soil. The water should wet the sub-soil layer, be taken up by it and passed on to the soil above as hygroscopic water. The soil thus gets its



BEGONIA CORONATA.

moisture slowly, and never contains standing water that can compact or sour it.

Such a sub-soil layer is well formed from soft bricks with their lower edges removed as passageways for the running water. All water for the plant must thus pass upward through four inches of porous brick before reaching the soil. But other material can also be used. Cinders and coarse gravel, from which all finer parts have been sifted, can form an inch or two on the bottom, with as much more of the same sort but finer above, and then the soil. With even the best of such material it is an advantage to have long metal troughs, with their sides notched, inverted on the bottom and extending from the entrance pipe across the benches. These are put in place first, and the gravel or cinders added afterward. They need be only about an inch high. With brick, gravel, cinders, broken stone, or any similar distributing layer for the water; a most ample movement of air is also provided for. Much of the time, in fact, the spaces between the fragments of the sub-soil are filled, not with water but with air, and at no time are they entirely filled with water, if the watering is properly done. Moreover, the inlet tubes on the front of the bench and the overflow tubes at the rear permit something of a circulation of air through the sub-stratum at all times.

Whether the bottom of the bed shall be formed of zinc, galvanized iron, cement, or some other more or less perfectly impervious material can be left to individual preference. But a perfectly level, water-tight bottom will distribute the water the evenest and give the cultivator the best control over the bench.

I have been very explicit about the character and structure of the sub-soil layer for sub-watering because it has seemed to me that some of those who have written in contemplation of the establishment of a trial bench or house were in danger of missing the most valuable feature of the method. Everyone knows that if the water level under a garden should stand in contact with the loam, it would be very detrimental. We are trying to establish artificially a water table that never comes in contact with the loam of the bench, and that contains no fermentable or decomposing material.

By this means the soil is never soaked with liquid water, but takes all its moisture by capillarity.

A point on which I had not given thought at the time my paper was read before the Carnation Society, was so forcibly brought forward then that I have been looking into the matter carefully since. The point is in reference to the possibility of successfully applying liquid fertilizers to plants in connection with sub-watering. My present view is that any fertilizer, whether liquid manure, ammonia, nitrates, phosphates or potash may be mixed with the stream of water so long as it does not contain solid matter to clog up the distributing sub-layer. Nitrogen fertilizers especially could well be applied in this manner, and the upward movement of the water through the soil would undoubtedly carry the fertilizing ingredients with it. The soil of the bench should be made reasonably rich at the outset, especially with phosphates, and then additional fertilizers for growth, particularly manure water, can be added in connection with sub-watering.

J. C. ARTHUR.

Miscellaneous.

SPRINGDALE FARM.

We present herewith some views of a farm homestead, that of Mr. G. N. Carruthers, near Oberlin, Ohio, which clearly demonstrate that the residences of our farmers in all parts of the country can be made very pleasant places. True, the soil here is well adapted to the cultivation of most kinds of plants, fruits and flowers, as well as farm produce, and Mr. Carruthers has a further advantage in the considerable variety of elevation which his place affords. There are high grounds with gravelly, sandy and loamy soils; valleys with fertile deposits, broken banks and sandy bottoms with living springs and running streams.

But these or similar conditions exist on many farms which can hardly be called attractive. It is simply a question of giving the matter a little consideration as to the best way to utilize the natural advantages of a given site, and then judiciously spending a few dollars on the

labor and materials best calculated to make it profitable or ornamental, or both combined. It would be useless to make an orchard in the swamp, but with little trouble in many cases such objectionable features may be eliminated or converted into veritable gardens at small expense.

The lower portions of the ornamental grounds at Springdale Farm have been turned to account in the formation of lily ponds, the banks and numerous islets of which are covered with such semi-aquatic plants as cannas, irises, cyperus, arundo, acorus, typha, etc., etc. Rustic bridges are placed over the streams, and on the higher ground trees and shrubs are grouped for shelter and effect. Much space is given to orchard plantations, and small fruits and vegetables are grown in sufficient quantity for home consumption and interesting and valuable experiments.

A neat lawn dotted with flower beds surrounds the dwelling, and a small greenhouse does a vast amount of service in providing shelter for tender bedding plants, producing flowers for decorative purposes in winter, starting early vegetables and flowers in spring, and in maintaining a supply throughout the year of those herbs which are indispensable in every well regulated kitchen. The residence itself gives material aid in furnishing support for grape vines, clematis, honeysuckles and other decorative and useful plants.

Perhaps it would be impossible to render all our farm houses similarly pleasing, but we are convinced that much can be done on these lines to improve them, and it seems to us especially desirable that all those in a position to do so should at least attempt to grow for themselves all the fruits and vegetables required for home use. Every farmer in the country can do so, and with this departure, and some little effort toward the adornment of the home grounds, he will have taken a long stride in the direction of that prosperity which attends the labors of a happy and contented family.

SEASONABLE NOTES.

Though it will be near if not quite the first of April before we can do much outdoor work, we shall in the meantime make all the preparations for spring it is possible to make. New borders will be manured and dug over, older ones cleared of mulching and accumulated rubbish. As time goes along we shall fill up vacant places in the herbaceous borders from the reserve garden, divide up worthy subjects and curtail overgrown ones. Little known kinds which may have grown too tall will be set back, and dwarf ones brought forward, so that our borders shall present an orderly appearance. Tritomas, gladioli, acidantheras, galtonias, montbretias, dahlias, *Lobelia fulgens*, and other roots and bulbs which have had winter storage will be put out in appropriate places. The planting of spring bedding stock—English daisies, *Silene pendula*, *Myosotis alpestris*, violas and pansies—may be done any time. The trimming of shrubs, roses and climbers will go on as the opportunity offers. With hybrid roses there is little choice left after an American winter as to how we shall prune them. They are always killed here level with the loose manure, or banking of soil, which was placed about them for protection the previous autumn, and all that remains for us to do is to cut out the injured, weak and misshapen branches. Spring flowering shrubs are never trimmed until they are past flowering. If trimmed earlier we should probably cut away



THE RESIDENCE AT SPRINGDALE FARM

flowering wood, besides it is scarcely possible to see what is dead until some growth is made. *Hypericums*, *Hydrangea paniculata*, and other shrubs which bloom on the current year's growth, are better for being cut back to within three or four buds. In this way they can be kept in a neat bushy form. Yellow-barked willows and red-skinned dogwoods require shortening every year to keep up a good supply of bright, attractive growth, for which alone they are valued. Clematis, wistarias, loniceras, aristolochias, forsythias and other climbers need going over as soon as the buds begin to swell, so that we can detect the difference between live and dead wood. Clematis, especially *C. paniculata*, we cut down to at least six feet. This we do so as to get a good break of growth low down on the old stems. If all the live shoots were left to develop in their own way we should be likely to get a congestion of shoots near the top of the trellis and barrenness below.

Indoors we have nearly finished propagating our stock for summer bedding. *Coleus* and *ageratums* we can put in later. A gentle hotbed would be beneficial for *alternantheras*, double *alyssum*, *Vinca rosea* and other plants of delicate growth, and here also we may sow seeds of tender summer annuals. Roots of *gloxinias* and tuberous *begonias* need overhauling, and the most forward may be potted; *cannas* and *dahlias* should be potted up and placed in a well protected frame. Old plants of *Poinsettia pulcherrima*, at rest, should get a little water now and again in order to induce the growth of material suitable for cuttings. Those growths showing now, taken with a heel, root better than tips taken later. Bulbs of *freesias* and *lachenalias* should be put in a good light place to ripen and not cut too short of water. Ripening bulbs well after blooming is as important a part of their cultivation as any. *Nerines*, *vallotas* and other bulbs of the *amaryllis* family may be started into freer growth by an increased allowance of water, and as time goes along an occasional dose of liquid manure would help them. Cuttings of winter flowering *begonias* should go in as the plants pass out of bloom, and towards the end of the month an early sowing of *Primula Chinensis* should be made.

T. D. HATFIELD.

Massachusetts.

The Flower Garden.

DAHLIA NOTES.

If you are growing dahlias on an extensive scale you are now busily occupied in potting, hardening off and all the necessary details for preparing the cuttings for the ground. If, however, their cultivation is only a side issue, the clumps of roots may now be awaiting your pleasure in their place of winter storage. It is time to be forwarding them for early work. A cold frame or a mere bedding out of the roots in a warm, sunny situation with a covering of light earth, litter or horse manure will do the work. Perhaps you will find them already starting freely when you take them out. You will be very certain to do so if their place of storage has been quite warm. In this case you can safely divide them at once before bedding out, making as many divisions as there are starting buds. If the crown of a root shows two or three buds run the knife lengthwise so as to divide the root into an equal number of



HOME GROUNDS AT SPRINGDALE FARM

pieces. If the buds are still dormant when taken out of storage, ten days or a couple of weeks' exposure in a warm starting bed will set the buds into a free growth, and then the roots may be divided as described above.

After division the roots may be bedded out in the open ground, proper precaution being taken against frost at night and cold stormy weather. Exposure during all suitable weather will produce a strong, stocky growth, and at planting time you should have a stock of thrifty plants two or three inches high, backed by a considerable amount of tuber which can be safely sent to almost any required distance. In case the growth should become too rampant before the plants can be disposed of, cut back the shoots, and the buds already formed at the base of the stalk will start into immediate growth. It requires but a short time for plants grown in this way to become established in their permanent quarters and to start into rapid thrifty growth.

H. F. BURT.

SOME NEW AMERICAN CANNAS.

Everybody admires the grand additions to the canna family, by M. Crozy; flowers with large broad petals, full large heads and beautiful colors, but when some of the new American cannas become better known their desirable qualities and new colors will be appreciated. The following are a few striking varieties:

Klondike is a true pure orange with a glister and sheen that cannot be described or reproduced, very large full heads with many trusses; the petals are two inches wide, rounded at the apex and incurved, foliage large and handsome. It is an early and profuse bloomer, and in the winter the flowers last a long time; one head was in bloom from the middle of December until March 1. While there are a few good orange varieties of foreign origin there is not one that approaches Klondike in size and clearness of color.

Champion is a very fine red. There are scores of red cannas, and many are little different one from another, but this variety has several very decided characteristic features. It is immense in individual flowers, and the spikes are massive, each

having four and five trusses; the petals are broad (two and one-fourth inches) and rounding. The ground color is a dazzling crimson-scarlet overlaid with a rich golden lustre, which gives the flower a very brilliant appearance.

Duchess of Marlborough is a pure pink. This is a color that has been sought after by specialists. While we have several varieties of a pink shade there is only one that is the exact shade of pure pink of Mr. Schuyler Mathew's color chart, published by the American Florist Co., and this is Duchess of Marlborough. Mlle. Berat is one of the finest varieties of a pink color, but it is a darker shade than pure pink. The petals of the Duchess are long and gracefully curved, making a very wide flower; each spike produces four to five trusses and each truss enormous quantities of flowers, making a very floriferous variety. The foliage is long and a bright green color. The above varieties grow to a height of four or five feet.

Duke of Marlborough is a dark velvety maroon, shading towards purplish black, the color heightened by the contrast of the bluish, metallic green foliage; compact erect spikes, branching and very floriferous. A bed of the Duke on a bright day looks almost black, the color is so velvety and rich; height three and one-half to four feet.

Cuba is a new variety of the Queen Charlotte type, which bears immense flowers of a deep chrome yellow color with a blotch of deepest vermilion covering more than half the center; obtuse petals, flowers of fine form and good substance; large branching spikes.

Lorraine is a fancy variety with bright pink petals broadly edged with creamy white which changes to white as the flower develops.

Philadelphia is one of the best bedding cannas grown to-day; the bright glowing crimson-scarlet flowers are borne on large dense spikes, well above the bright green foliage; the flowers as they fade drop from the spike, leaving the plant clean and fresh. The growth is very even, about three and one-half feet. A large bed of Philadelphia at Mr. Craig's place last summer was an attractive sight.

HAROLD OTTER.

GARDENING

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PLANS for a national park on the battlefield at Lookout mountain are well under way.

Two new and much improved varieties of the common artichoke are said to be very popular in European gardens.

A LARGE number of mulberry trees have been set out at Springville, Utah, in anticipation of the growth of the silk industry.

THE state of New York has appropriated \$10,000 for the establishment of a College of Forestry at Cornell University.

THE Wichita, Kansas, posts of the Grand Army of the Republic will plant a liberty tree with appropriate ceremony in Riverside Park, April 20.

CROCUSES planted so as to form the words "Welcome Spring" have attracted much attention in Lincoln Park, Chicago, during the past week or two.

FOR the third consecutive year the Richmond, Indiana, city council has voted an appropriation of several hundred dollars to carry on the preliminary work of establishing gardens for the poor of the city.

A WRITER in an English paper gives this recipe for preventing rust in carnations, which he received from a gardener in Germany, whose plants were unusually fine and in healthy condition. He mixes two pounds of vitriol and four pounds of freshly-slaked lime in twenty-seven gal-

lons of water, and stirs well together, until it is clear, not blue, and then he adds two pounds of sugar and mixes all again. With this he syringes his plants once a week, early in the day. The syringing should be done quickly, finely and evenly.

At a recent meeting of the national flower congress in Asheville, N. C., Mrs. McKinley, Mrs. John A. Logan and Mrs. J. S. Carr were added to the national committee. The purpose of the congress is to secure the adoption of a national flower for the United States. The next meeting will be held in Washington, D. C.

THE Pennsylvania railroad is about to send out a large army of gardeners, under the direction of the chief florist and landscape artist, to begin planting flowers and trees at many of the stations. Many new station lawns are to be sodded, and at places where new work has been done the cuts and embankments will be looked after.

THE park commissioners of Milwaukee, Wisconsin, are thinking of building a conservatory and propagating house in Mitchell Park, which will cost from \$16,000 to \$20,000. Two or three architects are now figuring on drawing the plans for this building. It is to contain a tank in which the water will be warmed and in which the *Victoria regia*, queen of water lilies, will be grown.

ARBOR DAY occurs April 8 in Missouri, and the horticultural society of that state is to be commended for the publication and distribution of a circular giving concise directions for the selection, digging and handling, and planting of trees. Lists of suitable trees, shrubs, roses and climbing plants are also given. Interested parties should send for a copy to the secretary, L. A. Goodman, Westport, Mo.

THE GOVERNORS of at least two states, Ohio and Wisconsin, have designated April 2 as Arbor Day, and they urged its general observance by tree planting. Governor Scofield, of Wisconsin, further suggests: "It would be highly appropriate for the schools of the state to devote the day to the planting of trees, shrubs and flowers so that the school grounds be permanently beautified, and I recommend that this be done."

SOME experiments recently in Belgium tend to throw doubt on the truth of the assumption that insects are guided to flowers by the brightness of their colors. Brilliantly colored dahlia were covered so as to show only the disks, and butterflies and bees sought these flowers with the same eagerness and frequency as those which were fully exposed. The conclusion reached that the insects were guided by their sense of smell rather than by their sight seems conclusive.

THE HORTICULTURAL DISPLAY at the Trans-Mississippi Exposition at Omaha promises to be very extensive. Mr. L. G. Kellogg, president of the Wisconsin Horticultural Society has applied for 500 feet of space for a fruit exhibit; Mrs. M. A. Shute, secretary of the Colorado State Board of Horticulture, has notified the authorities that she has on file guarantees for 1230 square feet of space in horticulture building, and hopes to soon have enough to completely fill the 1860 feet which have been reserved in this building for Colorado, and Prof. J. L. Budd of the State Agricultural College states that the horticultural exhibit of Iowa, prepared under the direction of A. F. Coleman, of Corning, will be very elaborate.

SOME NEW NOTIONS ABOUT OLD INSECTS.

The following is an abstract of a lecture on the above subject, delivered before the Massachusetts Horticultural Society by Prof. M. V. Slingerland:

For many centuries the insect world has afforded one of the most fascinating of all fields for observation by those who speculate upon the various phases of that mysterious something called life, and they get some of their most interesting facts from the insect world. Entomology, or the science of insects, is thus an old science and has had many devotees.

The first book devoted entirely to insects was published in England in 1634. It is a quaint old volume entitled "Theatrum Insectorum," by Drs. Penney and Mouffet. The volume is a compendium of what was known about insects previous to the seventeenth century. Hundreds of busy minds during the succeeding two centuries found recreation in watching these interesting creatures, and their recorded observations have added much to our knowledge of the insect world. It was not until about the beginning of the present century, however, that the lives and habits of insects came to be studied with a view to discovering their most vulnerable points, that men might the more easily destroy them. In short, that phase of the study of insect life which has come to be known as economic or applied entomology, is scarcely a century old.

In America, nearly everything relating to insects has been published since the Revolution. Many articles on well-known insect pests are scattered through the early horticultural and agricultural literature. In 1841 Dr. Harris's "Treatise on the Insects of Massachusetts" was published. This simply, concisely, yet beautifully written account of what the author had seen and learned about insects, justly entitles him to be called the "Father of American Economic Entomology," and the science of modern entomology may well be said to have had its birth in America with the publication of this noteworthy volume by the state of Massachusetts.

Inquiries from such horticulturists as have studied the injurious insects have stimulated workers in entomology to study our injurious insects with renewed vigor. The result is that the so-called "remedies" now recommended are more often based upon a more scientific and rational knowledge of the insect and of horticultural conditions than previously. The more progressive horticulturists now realize that the science of spraying has come to stay.

Climatic and other unknown conditions often cause a considerable variation in the habit and life of an insect. The same insect may pass through but one generation in a year in one locality, while in another state, perhaps only one or two hundred miles away, it will be double-brooded. It may lay its eggs on the fruit in one state and on the adjacent leaves in another. Oftentimes a successful method of fighting an injurious insect depends upon some apparently trifling habit which may be easily overlooked. My experience in studying the habits of insects during the past few years has led me to believe that there is much to be learned about some of those insects that we have thought we knew all about.

Recent additions to our knowledge of that old and familiar pest, the codling-moth, illustrate most of the facts above mentioned. If there is any one of our common insect pests about which we have thought that there was little new to be learned it is the codling-moth. There was

scarcely any change in our stereotyped biography of this pest for half a century or more previous to the present decade. In 1878 a practical fruit grower accidentally discovered that when he sprayed his trees with Paris green, he "not only rid the orchard of canker-worms, but that apples on the sprayed part were much less eaten by codling-moths." It was proved that one could kill a large percentage of the apple-worms by applying a poison spray just after the blossoms fall. This was soon demonstrated by many experimenters; the late Professor Lodeman satisfied himself that often at least 70% of the apples, that would be ruined by the worms could be saved by spraying. He could not see just how it was accomplished, and often appealed to me for an explanation. I could find no definite observations recorded upon the habits of the newly hatched worms; and it was only quite recently that anyone had ever seen the eggs of the codling-moth. My studies have resulted in some new notions about the habits of the insect.

All are familiar with the caterpillar stage of this pest, but not so many have seen the adult insect. A new and more conspicuous difference between the adult male and female has been discovered. In the under side of each front wing of the males only there is a narrow elongated, blackish spot. Thus one can usually determine the sex of the codling-moth at a glance by the presence or absence of these black markings.

It is about the egg and the habits of the newly hatched worm that the most new light has been shed by recent investigations. The usual stereotyped statement, as taken from our leading textbooks on entomology, has been, "The moth lays its eggs singly in the maturing blossom of the apple just as the petals fall. As soon as the caterpillar hatches it burrows into the apple." I have now learned that the eggs are thin, oval, scale-like objects, not quite as large as the head of a pin, resembling a minute drop of milk; instead of being on or in the calyx, they are on the fruit near the calyx in old curculio scars, near the stem, or even on the leaves of the tree. Thus the commonly accepted notion regarding the egg-laying habits of this insect must be discarded. We now know that the eggs are not laid until a week or more after the petals fall from most varieties of apples and not when the petals fall, as was the common notion.

The little apple-worm crawls about the surface of the fruit until it finds the calyx, stem, or where the leaf touches; no feeding is done on the outside of the fruit except to gnaw a minute entrance hole through the skin. More often the little worm squeezes itself through between the two calyx lobes and gets its first meals in the blossom end. As nearly 80% enter here when we spray, soon after the blossoms fall we deposit some arsenic in the calyx-cavity, where nature kindly takes care of it for us by closing up the calyx lobes until ten days or two weeks later, when the little apple worm includes it in the menu of its first few meals. We can thus hope to reach with a poison spray only those apple-worms which enter the blossom ends of the forming fruits in the spring. To do this the application must be made soon after the blossoms fall, when the calyx is open. I can conceive of no possible way in which a majority of the 15% or 20% of the worms which enter the fruit at some other point in the spring and all the worms of the subsequent broods can be effectively reached with a poison spray. The falling of the blossoms

is the signal to begin spraying; the closing of the calyx lobes, a week or two later, is the signal to stop.

Another and familiar insect pest which has received considerable attention at the insectary of the Cornell Experiment Station is the peach borer. It is an American insect, and for more than a hundred years it has been recognized as a very serious obstacle to the growing of peaches in this country. Almost everyone who has grown this luscious fruit is only too familiar with the telltale gummy mass found around the base of peach trees in which the grub-like caterpillar of this pest is at work.

The life history and habits of the insect were fairly well known to the earlier writers. In the latitude of New York the borers mature late in June; they spin a cocoon of silk and particles of bark, near the entrance of their burrows. The females soon after hatching, begin to lay their eggs on the bark of the peach trees. The caterpillars hatch in from seven to ten days, and at once begin their destructive work under the bark, at or below the surface of the ground. They continue to work until cold weather sets in, when they ensconce themselves in a loose cocoon-like home near the surface of the soil, and there remain all winter without feeding. This winter habit seems to have been only recently observed. In May they begin to work again, and do the most damage in June.

After three years careful tests of all the substances which gave promise of being effective against the borer at the Cornell Experiment Station, twenty-one different things were tried. The following were ineffectual: Carbon bisulphide, asafoetida and aloes, lime salt and sulphur wash, resin wash (two applications), strong solution of hard soap, Hale's wash (two applications), tallow, which formed a thick and complete coating lasting until the next year, tansy grown around the base of the trees, whale oil soap (two applications), whitewash, paint made with lime and linseed oil, and wire gauze protector, which should be theoretically a perfect mechanical protector.

Six substances tried proved partially effective; of these two might be termed mechanical, the old "mounding system," and tarred roofing paper carefully tied around the base and extending below the ground; this seemed to protect against two-thirds of the borers. White paint kept out from one-third to one-half of the insects. White paint and Paris green killed many of the young trees. Coal tar was very effectual, only a few borers succeeding in getting started in trees brushed with it, and it did no injury to the trees. The following proved sure death to the trees: Paris green mixed with glue, raupenleim (German caterpillar lime) and dendrolene.

Nothing was found which would keep all the borers out and not injure the trees. A wash which has to be applied more than once a year will not pay, for one can dig out borers quicker. The "digging out" process is certainly the surest yet devised, and can be done with about as little expenditure of time and money as it will take to apply washes or mechanical contrivances thoroughly enough to keep the borers out. Although we did not accomplish our ideal, the experiment did demonstrate what is often equally valuable and important to know, that is, to know what not to do.

The five bound volumes of GARDENING are worth many times their cost at this time of year.



G. N. CARRUTHERS.

WORKERS IN HORTICULTURE, VI.

Mr. G. N. Carruthers, an account of whose home, near Oberlin, Ohio, appears elsewhere in this issue, has been for many years deeply interested in all that pertains to practical gardening, ornamental as well as useful. He is a graduate of Oberlin College, having worked his way through that institution, served two and a half years as an officer of the United States, and taught or superintended public schools and private for over a quarter of a century. He is now engaged in horticulture, and finds much pleasure in the management of an eighty-five acre farm, devoting his leisure to the adornment and improvement of the home grounds. Mr. Carruthers is president of the Lorain County Horticultural Society, and has been unsparing in his efforts to make it a power for good.

Fruits and Vegetables.

A NEW MUSHROOM SPAWN.

It is a well-known fact that selection is the most powerful agency in the improvement of cultivated plants. The slightest variation is contemplated by every horticulturist with the greatest interest, in the hope that a new variety may spring up, which would prove better in one particular or another than the types already known. It is through the agency of self-fertilization or of artificial crossing that almost all the improved plants (sport varieties excepted) have been obtained.

But as regards mushrooms these things are altogether different; no flowers, no sexes and no possibility of hybridization. The plant itself consists of a thin and subterraneous mycelium, upon which now and then appear a few round bodies; these are the stroma or "buttons" which will by and by develop into what we commonly call a mushroom. The mushrooms belong only to the upper classes of fungi, ascomycetes and basidiomycetes, the common mushroom or *Psalliota* (*Agaricus*) *campestris* belonging to the last named class. Now, the mushroom bears spores, which have the appearance of

very small seeds, although they are only asexual buds, and after all only parts of the mother plant; the spores can germinate and give another mycelium bearing some other stroma with spores, and so on. However, if we consider the *Psalliotia campestris*, we will find among it many varieties, some being much more valuable, heavier and better flavored than the others. These variations should not be called otherwise than asexual or sport variations, if we compare them with what occurs even in much more perfect plants, such as celery or chrysanthemum. But they have the greatest importance for the mushroom grower, who should always aim to get spawn of a perfect variety, a spawn which, up to the present day was not easily found in the trade.

There are various ways of preparing the spawn for the trade, but all of them start from the same principle, viz., to let maiden spawn, accidentally found on old stable manure, spread itself through a heap of a convenient substratum, stable manure or horse-droppings and cow-dung, and to divide it into bricks. The maiden spawn, it is true, originated from a spore, but a long time always elapses between the germination of the spore and the moment the bricks are ready for use. The small original plant has been allowed to develop into a very great one and then been divided, losing every day part of its energy, and at the same time becoming more easily attacked by various diseases which can completely ruin the crop. Every one who has tried to grow mushrooms knows how many deceptions and failures occur in that operation.

As we have seen, the maiden spawn is the result of a spore germinating fortuitously on stable manure. For a long time the attention of botanists was attached to the fact that it was impossible to grow artificial maiden spawn; the spores could germinate in the laboratory, but the young mycelium, even if placed on stable manure, died soon after. It is only quite recently that a French mycologist, Dr. Repin, succeeded in his endeavors. His process, of course, is still a secret, but the maiden spawn he produces has been tested by several mushroom growers in the neighborhood of Paris, and always proved quite a success.

All that we can know is that Dr. Repin sows the spores in dry and compressed stable manure, cut into small square bricks about 3x3 inches large and one-half inch thick. These bricks are used in the same way as were the former ones, but they contain much more mycelium under less weight and volume, the spawn, besides being perfectly young and fresh, has a great vitality, is free from diseases, and last, but not least, the spores that are sown are selected from choice varieties only, giving confidence to the grower that he will not spend his time, money and labor for a worthless crop.

VILMORIN.

DESIRABLE RASPBERRIES AND BLACKBERRIES.

In a recent bulletin of the Purdue University Agricultural Experiment Station, Lafayette, Indiana, the horticulturist, Prof. Troop, gives the following timely hints on these fruits:

The varieties mentioned below were all set in the spring of 1896. The plants were given ordinary cultivation with the exception that the land was subsoiled to the depth of fourteen inches before they were planted. The effect of the subsoiling was very noticeable on the growth of the plants the first season, and a fair crop of

fruit was harvested the second. I am confident that subsoiling land that is inclined to be heavy for these fruits will pay large profits on the money invested. A raspberry or blackberry plantation should give good results for at least ten years, hence the soil should be thoroughly prepared before the plants are set.

RASPBERRIES.

Twenty-eight varieties of raspberries and sixteen varieties of blackberries were tested. A few of the older varieties are retained for comparison, but the majority are of comparatively recent introduction. Some of the more desirable varieties are given here.

Miller is a remarkable bearer of medium sized fruit. J. H. Hale, of Connecticut, pronounces it the best of all the early reds for general cultivation.

Loudon is a good mid-season, market berry. It will carry well.

Columbian and Shaffer are made up on the same plan, both bear large purple fruit and both propagate from tips. If you have one you do not need the other.

Among the newer black caps we have nothing that will surpass the Conrath for size and earliness, and Kansas for a mid-season berry.

A new variety from New York, called Black Diamond fruited for the first time last season, and in point of size and productivity it equals the Kansas.

Among the yellow or cream colored varieties, Golden Queen is much superior to any other variety tested. In addition to the above, for general planting, the following varieties are recommended:—Eureka, Hilborn, Johnston's Sweet, Nemaha and Progress.

BLACKBERRIES.

In the list of fruits recently prepared by the Indiana State Horticultural Society, made up from lists sent in by more than 100 correspondents, representing every county in the state, the Snyder blackberry appears in more than three-fourths of the lists. In the southern counties, Early Harvest, Early King, Taylor, Ancient Briton and Erie follow closely after Snyder, while in other counties, Eldorado, Agawam, Kittatiny, Minniewaski, Stone Hardy and Lucretia dewberry are quite largely grown. Judging from their behavior in our experimental grounds, the following varieties are recommended for general cultivation:—Agawam, Ancient Briton, Early Harvest (with protection), Eldorado, Erie, Snyder and Taylor.

Miscellaneous.

COWSLIPS.

ED. GARDENING:—Is it not true that the plant *Caltha palustris* (marsh marigold) is extensively and popularly known in England as "cowslips"? though the latter name properly belongs to a member of the primrose family. Is it not also true that the *caltha*, though belonging to the acrid and poisonous crowfoot family, is used as a pot herb. A little light on this from GARDENING will much oblige one reader and may interest others.

QUERIST.

[We are not aware that the name "cowslip" is ever applied to any plant other than *Primula veris*, nor can we recall an instance of the use of *Caltha palustris* as a pot herb. Perhaps some reader may be able to supply the desired information.—ED.]

AMERICAN RHISED ROSES.

The question is frequently put to me why are there not more American seedling roses of merit raised. The reply to this may be given from several standpoints, two or three of the most important reasons being as follows:

The first is, that in a general way the process from the fertilizing of the flower till the plants bloom takes too long for our ideas of getting the desired results; for proof of this we have only to turn to the carnation and chrysanthemum; here it takes only a few months, six to nine at most, to determine what our efforts have produced, and as a result we have plenty of sterling varieties of both these flowers continually being offered. But with the rose it is quite different as it takes three or four times as long to get any indication of what the results are likely to be, and then if out of several hundred seedlings there should happen to be one or two that are promising on first blooming, it takes a much longer time to work up sufficient stock to give a fair trial to test the many desirable qualities such as color, size, free blooming, healthy, vigorous constitution, distinctiveness and several other qualities necessary to make it worth putting on the market, and then when the raiser has satisfied himself on all these points it takes a still longer time to work up sufficient stock to enable him to offer it for sale. This, of course, is presuming that the first blooms hold their characteristics good continuously, which often happens to be the reverse, then a double disappointment is the result. This long waiting and often final failure to obtain the desired multum in parvo deters many from trying again after their first attempt. On this score it may not be out of place to mention the fact that many seedling roses do not show their full character the first time blooming; often the most promising at the first are the most disappointing later on, and others with less attractiveness on first blooming turn out much better with further acquaintance. Thus there is always a great amount of uncertainty attached to it which deters many from taking up this branch of our business that otherwise would and could do so with great advantage to horticulture.

The next factor in this case is that so few of our rosarians in this country feel they can afford the time necessary to pursue this subject with that minute detail and study necessary to make it a success. This is particularly true of the commercial florist generally. No one, I think, will dispute the fact that this class of men have all they want to do to manage their business successfully and pay their way, having no time for indulging in anything that does not promise quick returns. But this does not apply to many amateurs who could if they would take up the raising of seedling roses and find a great amount of pleasure in the occupation. I do not mean by this that anyone with just enough knowledge of horticulture to know what a rose is could do so, but those who have made a study of flowers for their own pleasure, and who often become expert judges of the different qualities necessary in any flower, could select the parents having the best developed qualities which, when blended, would produce the best and most distinct forms desired; and no country to-day offers the inducement that ours does for anything that is really an improvement in roses. The field is a broad one and those having the time and means to devote to this subject need have no fear of over-production or of not finding in

our republic an appreciative people willing to endorse a really good thing, even though it be a queen.

Summit, N. J. JOHN N. MAY.

Societies.

NOBLE COUNTY HORTICULTURAL SOCIETY, IND.—The March meeting was held at Avilla on the 25th. Music and interesting papers comprised the programme, and the discussion was general and deeply interesting.

ROSS COUNTY HORTICULTURAL SOCIETY, OHIO.—This society has recently been formed, and the following are the newly-elected officers: President, N. I. Shiveley; vice-president, Nathan Ward; secretary, F. C. Martin, temporarily; treasurer, W. H. West. Executive committee, N. Ward, G. W. Kincaid and W. H. West.

SHAWNEE COUNTY HORTICULTURAL SOCIETY, KAN.—The programme for the meeting to be held April 7 is as follows: "How to Keep Up the Fertility of the Soil," Judge F. Wellhouse. "Spraying," Walter Wellhouse. "Family Entertainment in Country Homes," Mrs. W. Sims. The meeting will be held at the court house, Topeka.

WAYNE COUNTY HORTICULTURAL SOCIETY, IND.—At the March meeting of this society the standing committees on agriculture, fruit, flowers, entomology and ornithology reported, and an essay was read by Stephen Kuth on "Commercial and Home Marketing of Berries." Martha J. Avey, Anna Larsh, Eliza Howard, Mary Dickinson and Jennie Barnes were declared elected members.

CENTRAL NEW YORK HORTICULTURAL SOCIETY.—Early in June a strawberry and rose festival will be held in Syracuse under the auspices of this society, when several prizes will be offered consisting of bicycles, etc. The officers of the society are: President, S. T. Betts; treasurer, F. H. Ebling; secretary, David Campbell; vice-presidents, A. D. Perry, E. A. Powell, L. E. Marquisee, C. W. Snow, F. C. Brower and W. Judson Smith.

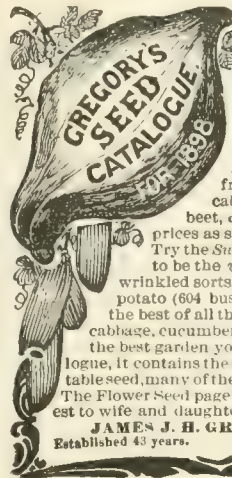
MICHIGAN STATE HORTICULTURAL SOCIETY.—"Some Mistakes We are Making in Fruit Growing" was the first subject for consideration at the regular meeting of this society, and was well handled by J. N. Stearns, of Kalamazoo. Prof. R. L. Taft, of the Agricultural Society, spoke briefly on the art of "Laying Out Home Grounds," and Prof. Corryell of Detroit, gave a fine talk on "Setting and Caring for Village and Roadside Trees."

WEST LIBERTY FLORICULTURAL SOCIETY, IOWA.—This society was organized January 16, 1896, with thirty-three charter members. At the present time there are sixty-six members enrolled. Many members are farmers' wives. In August, 1896, the society gave a flower show which was well patronized and greatly enjoyed. The proceeds were over \$45, a part of which was expended in planting trees along the walk leading to the cemetery. This society has done much to stimulate an interest in village improvement. In summer the yards and streets are uniformly well kept, and many flowers may be seen in the yards.

The present officers are: Mrs. Josephine Hollingsworth, president; Mrs. Mary Quier, vice-president; Mrs. Bella L. McElrany, secretary; Mrs. A. W. Hollingsworth, treasurer.

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JASPER COUNTY HORTICULTURAL SOCIETY, MO.—At the last meeting of this society the opinion was general that peaches and pears had not suffered much from the recent cold snap.

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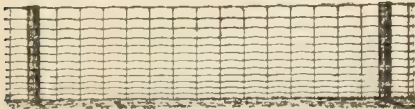


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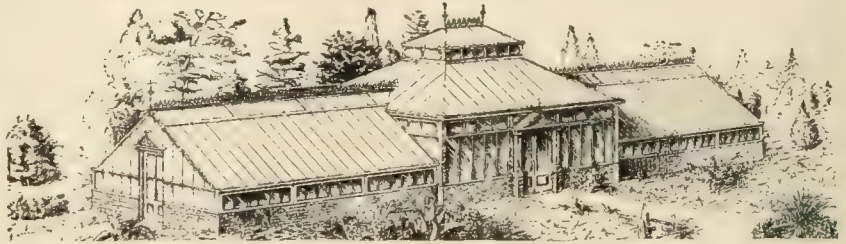
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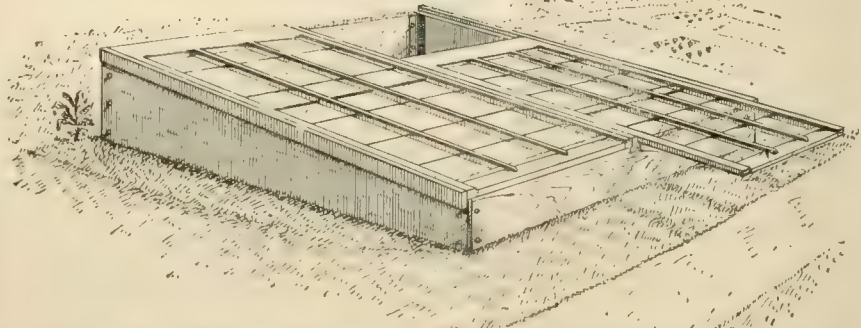
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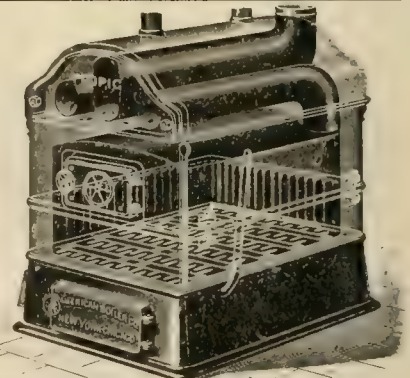
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GARDENING

Vol. VI.

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CHICAGO, APRIL 15, 1898.

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No. 135.



RHODODENDRONS AT WELLESLEY, MASSACHUSETTS.

Trees and Shrubs.

THE RHODODENDRON.

Although more than forty years have elapsed since I commenced the cultivation of rhododendrons, my great admiration for them has in no degree abated, and I cheerfully respond to your invitation in sending you a few notes which I hope may prove of interest to some of your numerous readers. As showing the great change which has taken place in the cultivation of these shrubs since I commenced growing them, let me say that in those days we were obliged to content ourselves mostly with the common seedlings raised in England, and a few named varieties, such as *Everestianum*, *Chancellor* and a few others, it being maintained by many experienced cultivators here that none of the dark crimson and scarlet hybrids could possibly be grown in our cold New England climate, the Himalayan *R. arboreum*, which was tender, having been largely used for hybridizing purposes. We have, however, finally succeeded in growing a large number of these choice hybrids in spite of many difficulties and discouragements, one that

was very serious being our limited supply of water in those days, when an occasional watering pot of water was all we could possibly spare for our suffering plants, and the consequence was the loss of several hundred of them.

Even in New York the same idea was prevalent in those days, Henry W. Sargent, of Wodenithe, being one of the first to become interested in the subject and to import, as an experiment, a few of those varieties selected by Anthony Waterer, of Knap Hill, as being most likely to succeed in this country. This led to his giving more attention to raising half hardy hybrids for the American market and to his making later, in 1875, a visit here for the special purpose of a personal inspection of the plants he had been, for several years, sending his customers. His visit was of so satisfactory and encouraging a character that he continued up to the time of his death, a year or more ago, to be intensely interested in the subject of growing choice new varieties, which, from his long experience, he had good reason to believe would stand our vigorous New England climate. We have now, of course, large specimens of the different shades of crimson varieties which, at one time, it was thought, im-

possible to grow here, and we are constantly adding new ones to the list. Some of the latest, which cannot be recommended too strongly to cultivators, are: C. S. Sargent, Mrs. C. S. Sargent, F. L. Ames, Mrs. H. S. Hunnewell, Lady Grey Egerton and Mrs. J. P. Lade. We have also been testing, for several years past, many new unnamed varieties, grown expressly with reference to their hardiness in standing our severe New England winters, which will in time be offered to the public if found reliable and unusually attractive by their rare colors and markings.

The best mode of preparing a border for the cultivation of rhododendrons being a subject we often find discussed, I will here say a word, my experience having been considerable. As to the proper depth, three feet may be all that is necessary when the plants are small, but when they attain a great size with age, the balls become very large, indeed, and will require at the least full four feet of good suitable soil. It has been my habit for many years, as my plants have increased in size and become crowded, to take them up and move them at a greater distance from each other, thus re-planting the whole collection every few years. It in-

volves, to be sure, a great deal of labor, but it improves the appearance of the borders, as the plants do not run into each other and become unsightly. It has likewise increased my facilities for observation and aided me in reaching the conclusion that while they may succeed fairly well in good garden soil, it is equally clear to my mind that peat is beneficial to their healthy growth and vigor, and I have consequently been in the habit of using it very freely for many years, and think I can recommend it with confidence to cultivators. I make a compost of peat and leaf mold in equal portions, occasionally adding a little dry cow manure, when I see a plant is not looking particularly healthy.

But important as I consider the use of peat to be, I must add that giving the plants an abundance of water in our hot summers is even more of a necessity, for in my judgment drought is by far the greatest difficulty we have to contend with in our climate. Of course, a great deal depends on the character of the soil, for if it is a reclaimed meadow or naturally retentive of moisture, irrigation may not be indispensable; but if we have to deal with ordinary garden soil, I do not believe it is possible to have a perfectly successful plantation of rhododendrons in this country unless the hose is frequently applied and the plants kept moist. The injurious effects of drought are not as easily discovered as with deciduous plants, but they show themselves very plainly in the early spring, when we find browned foliage, if not dead plants, or dead flower buds which were not fully ripened, owing to a lack of moisture in the autumn. In my opinion, drought among recognized hardy varieties is the cause of the loss of five times as many plants as our cold weather. It may be well to add that some care is necessary in watering, rhododendrons having a large mass of fibrous roots from which, when dry, the water is apt to run off unless a basin is made to hold it, enabling it to soak in gradually.

It is also a little mistake, I think, to choose a southern exposure for a plantation which has the sun all day, this being done frequently under the impression that the plants are tender. It is objectionable, first, because the rich, lustrous foliage, which is so ornamental, suffers a little from the bright sunshine, and then again it is more liable to become scalded in March, when covered with frozen sleet. I therefore prefer to give my borders a northern exposure when it is convenient to do so.

H. H. H.

Massachusetts.

NOTES FROM EGANDALE.

The comparatively mild winter has treated plant life much more kindly with me than its predecessor, which took occasion to demolish about all the flowering buds of the Japanese plums, apples and cherries. Relieved from the demand of maintaining and maturing the flowers, they made wonderful growth, and now promise a wealth of bloom.

Heuchera sanguinea suffered badly a year ago, and as a consequence, flowered quite sparsely. The plants had, as I supposed, been well protected. Last fall I took an old hotbed frame and set it around the group, scattering over them a few oak leaves, and then placed a roof over the frame with some old boards. This spring they are as bright and lively as a boy with a new drum.

Last spring I imported some English varieties of *Pyrethrum roseum*. The

plants were in poor condition when received, looking as if they had been heated in transit. I planted a dozen in a bed that was fully six inches higher than the surrounding soil. Nine out of the dozen lived, but bloomed feebly when fall came. I placed a few leaves around them, and inverted a shallow box over them, being sure that the bottom was water proof. This spring they are stronger and more robust than my older plants situated on level beds. Moral: Plant on elevated beds, and keep the water away from them in winter.

Many inquiries have appeared in GARDENING from time to time regarding the hardness in this region of *Kalmia latifolia*, the sheep laurel, so plentiful and handsome as an undershrub in the east. I have tried six plantings, and in all cases, have failed with it. If protected in winter and a potted plant can be obtained, as my last specimen was, being exhibited at the World's Fair, it may live an unhappy existence a few years, dying by inches. I made up my mind last fall to let my specimen enjoy the bracing air of our winter, and it is now ready for the post mortem.

The heavy snows caused the numerous rabbits in our vicinity to hustle for food. If there is any shrub on my place they haven't tasted, it was because they couldn't find it. *Spiraea Van Houttei*, *Rosa rugosa*, barberries, any young growths of the different forms of the beech, and even vines of the akebia suffered. The prunus family was their delight, not in the way of barking young trees, for they did not do that; but they seemed possessed of a mania to relieve me of the duty of spring trimming, and any shoots, limbs or side branches, not larger than a thick lead pencil were smoothly cut back, to suit their fancy, not mine. When one has striven for some time to trim into a shapely, bushy form a *Prunus triloba*, finally getting it about right and full of bloom buds, his temper is apt to be somewhat upset when he finds it mutilated and one-sided. Next fall a wire netting protector shall be placed around choice specimens. A group of about one hundred hepaticas, in the shrubbery, but in a more open situation than the natives in the ravines, thus blooming earlier, were entirely stripped of their flowers in two nights, presumably by the rabbits, as they were seen near them in the moonlight.

The pleasure of gardening is somewhat alloyed with disappointments, but we forget the latter in the enjoyment of the flowers. The blooming of the hepaticas and the opening of the colony of crocuses has almost obliterated from my mind the fact that the field mice stole over 300 Spanish and English iris bulbs from their beds, and piled them up in different parts of a covered rose bed, waiting until the warming earth had started them into growth, that they might feed on the tender roots just forming.

Last fall I put twenty-eight two-yard loads of well rotted manure on a portion of my lawn. It was manure from the cars bringing stock from the west, and contained a good percentage of soil, as where ordinary bedding is scarce, a light earth is used as an absorbent. This spring it was thoroughly raked over, and all sticks, stones and litter carried away. Eight loads were carted off, thus leaving twenty as residue. The surplus will be used to mulch the raspberry beds.

Deutzias are in good form this spring, promising a treat I cannot always get, although all of them are furnished with straw overcoats each winter. D. Pride

of Rochester seems to be the hardiest. *Spiraea Thunbergii* is for the first time in my experience here, alive nearly to the tips. It has always been wrapped, but generally winter-killed so badly that had it not recuperated quickly, and furnished such a handsome mass of colored foliage in the fall, I would have discarded it long ago.

Roses Clothilde Soupert and the pink Soupert, were protected only by coarse straw thrown over them, and held in place by strips of light weight chicken fence wire. They killed back more than in the previous winter, a much more severe one, when they were protected by boards which kept them dryer. The pink form stood it the best. W. C. E.

RAMBLER ROSES.

It would seem as if all climbing roses of the future are to be called Ramblers, owing, probably, to the success of the name given the really beautiful climber sent out by the Turners of England and given the very appropriate and euphonious name, the Crimson Rambler. This variety was introduced from Japan into England over thirty years ago and remained in oblivion until seen by the Turners, nurserymen of Slough, who recognized at once its good qualities and sent it out into the world, where it will ever remain a living example of their genius and enterprise.

The few plants set out the past two years have done exceptionally well in all parts of the country.

As a pot plant for Easter sales it is incomparable; its hundreds of blossoms all open together and seeming to improve for at least two and even three weeks, make it especially valuable. Nothing has been said yet either by tongue or pen to do this rose justice; it must be seen to be appreciated.

But of the others, the yellow, the white and the pink which are being heralded as the same except in color, in fact pictures representing them of the same sized and formed flower and cluster are being sent out. The accompanying pictures of plants in pots show something of the form of each, in fact flatter them very much except in the case of the Crimson, which is not a good picture. How men who pretend to be honest can make such representations is past our comprehension.

The yellow rose Aglaia is a pale lemon yellow with about one-third the number of petals and not more than half as many flowers to a cluster as the Rambler. No doubt it is a pretty climbing rose, but then it is not the same as the Crimson Rambler, only yellow. The pink and white varieties are much inferior to the yellow, the flowers being considerably smaller and very single. K.

FLORICULTURAL NOMENCLATURE.

The nomenclature committee of the Society of American Florists is desirous of laying before the society any cases of misnaming or double naming of plants handled by the American trade, which ought to be considered by the society. Any cases coming under the jurisdiction of this committee should be reported to the undersigned not later than the first of July, with full indication of the circumstances and the parties involved.

WILLIAM TRELEASE, Chairman.
Mo. Botanical Garden, St. Louis.

The bound volumes of GARDENING contain a vast fund of information on all seasonable topics. Five volumes for \$12.



AGLAIA, THE YELLOW RAMBLER ROSE.



THE CRIMSON RAMBLER ROSE.

SHRUB QUERIES.

ED. GARDENING:—Has anyone succeeded with *Andromeda Mariana* and *Crataegus Pyracantha* in the locality of Chicago, and if so, what are the necessary conditions? Also, what has been decided upon as the best way to grow *Hypericum Moserianum*? We do not find it a free bloomer. Is there any such plant as *Hydrangea vestita*? F. N. B.

I doubt if any species of *andromeda* will thrive near Lake Michigan, in this section. I am planting *A. Mariana* this spring for trial. *A. arborea* (*Oxydendron arboreum*) and the new *A. japonica* have failed. As our soil is naturally strongly

I have tried wintering the handsome *Hypericum Moserianum* out of doors under good protection, but found no life in them the next spring. I now take them up in the fall, and winter in a cellar or deep cold frame; the latter is the best, if well drained. I cut them back quite severely in early April, so as to encourage a strong new growth, planting out after they have become hardened off; they then bloom quite freely. I like *Hypericum aureum*, from the mountains of Tennessee, about as well. The flowers are not quite so large, but the shrub is perfectly hardy and of good form.

Hydrangea vestita is catalogued by the Shady Hill Nursery Co., Boston,

the base will be nearly as thick as a broom handle. It blooms in clusters composed of large numbers of double flowers about the size of a double cherry blossom. It blooms only once a year, it is true, but it is a grand sight for three weeks or a month after it commences to flower. The flowers are a bright cheerful shade of crimson, and it has a very telling effect in the landscape, no matter whether the garden wherein it is planted is small or in the more pretentious pleasure grounds of the wealthy.

This grand rose has been referred to before as an Easter plant; this gives it additional value, though, personally, I would never have suspected that it would



THALIA, THE WHITE RAMBLER ROSE.

impregnated with lime, a condition supposed to be injurious to this family, I prepared a special bed for them of peaty soil, but in two years they died.

Crataegus Pyracantha, being an evergreen and not thriving in exposed situations in the east, will not, in my opinion, succeed here. But few, if any, of the broad-leaved evergreens do well with me, the nearest approach to success being the *Berberis aquifolia* (*Mahonia*), which is very apt to lose its foliage in winter. *Crataegus Oxycantha* does fairly well when surrounded by a shrubbery that keeps the sun off the soil around the roots. I have them ten to twelve feet high; they do not, however, grow as luxuriantly as at the east near the coast.

Mass., as blooming in June, growing six to eight feet high, and as being as showy as *H. paniculata grandiflora*. I have had it one year, placed a box over it last winter, and it now seems to be in splendid condition.

W. C. EGAN.

Highland Park, Lake Co., Ill.

ROSE CRIMSON RAMBLER.

Crimson Rambler is the greatest rose that has been introduced in modern times. It may not be hardy everywhere, though I have not heard of any place where it is not so. It is distinct in growth and in manner of blooming. The third year after planting it will make canes from eight to fifteen feet in length, and at

be considered useful for that purpose, but such it is, and in Philadelphia it will be used in large numbers this year. Messrs. Robert Craig & Son, Robert Scott & Son, and Wm. K. Harris saw a future for it and went into it heavily. There is nothing at all like it, or approaches it in effectiveness at this season of the year when well done. Some plants we saw at the Messrs. Craig's had been in bloom for three weeks and they were still in excellent shape, showing how well adapted it is for such a purpose. No other rose that I know would remain salable so long. If I am not mistaken our good friend, Jackson Dawson, should receive the credit for showing the possibilities of this plant for use at Easter, and another good friend,

Lawrence Cotter, is entitled to the credit of taking advantage of the fact. Yellow Rambler and White Rambler are both disappointments as Easter plants.

E. L.

MAGNOLIA STELLATA.

In the small but well kept grounds of F. Jenkins, Jersey City Heights, may be seen one of the most beautiful specimens of the above.

It is about ten feet high, feathered to the ground and evidently fully developed. On April 5 it was covered with one mass of star-like, semi-double flowers nearly pure white in color. The mild winter and exceptionally fine weather during the month of March has probably had something to do with this early display.

Passing by the same lovely object two days later it did not present such an inviting appearance, the reason being that it had just passed through a severe ordeal in the shape of several degrees of frost.

Behind the terminal flowers of this harbinger of spring scores of other flower buds were awaiting nature's command to spread forth. So it seems no matter how fickle the weather this lovely magnolia can be caught in its best dress, if not to-day then some other day.

It should be planted by all lovers of hardy shrubs, either as a single specimen or massed. I do not know whether young plants flower as freely as old ones. If they do it would be worth the florists' while to try them, for with little or no forcing they would make attractive Easter plants.

B. HALL.

New Jersey.



EXACUM AFFINE.

The Greenhouse.

EXACUM AFFINE.

This lovely gentianwort is one of a genus of twenty species, and a native of Socotra; though not so gorgeous as its near relative *Exacum macranthum*, which requires a stove temperature and has much larger indigo-blue flowers, yet the all-round charms and characteristics of the former will, in my opinion, out-balance the gorgeousness of the other. One of the good points about *E. affine* is its natural compact habit, delicious fragrance, profuse flowering disposition, continuing in its floral garb for quite a length of time.

The color of the flowers varies according to treatment; if kept in bright sunny quarters they assume a bluish lilac color, in the shade, blue to deep blue. It is considered by some authorities an annual, but more properly it is a biennial, though I have kept it in the pink of health for nearly three years.

Seeds sown in August will produce plants, properly handled, suitable for seven-inch pots the next succeeding August. Seeds sown in March in a warm greenhouse, or greenhouse temperature, will produce plants suitable for five-inch pots. The soil I find best adapted for its culture is good fibrous loam and leaf mould, the latter predominating with clean sharp sand in addition thereto in quantity.

The seeds are so small, so few and so far between in a seedsman's package of this plant, that the aid of a Lick observatory telescope is necessary to locate them, hence the extreme care that is required to deposit them on their seed

bed, which ought to be smooth, and the materials thereof finely sifted. It will propagate, however, as readily as the proverbial weed. Greenhouse temperature is the most suitable for the subject of this note, which, of course, means any way from 55° to 60° Fah.

The plant must be kept in a cool, but not draughty greenhouse or frame in the summer time, and shaded from the fierce sunlight; it requires lots of water at all times, except in dull cloudy weather, or in a less congenial temperature than 55 degrees.

K. F.

CHRYSANTHEMUM NOTES.

Chrysanthemums to be grown for specimen plants are now ready for a shift into 6-inch pots. We begin with this potting to use a richer soil. In addition to the ordinary compost used for potting a variety of plants, we add a dusting of wood ashes and a little pulverized sheep manure; we are careful not to use a large proportion; we know what it is to make mistakes. Free drainage is essential. Charcoal is recommended to be used in the drainage of such varieties as are liable to burn. This probably might be deferred until the final shift, though charcoal is good at all times, especially when we have a heavy soil to handle. Chrysanthemums root freely in coal ashes, as we may notice when they are set on a bench of this material. Ashes used as drainage do quite as well as broken crocks. We pot firmly when the soil is light, and loosely when it is heavy.

In spite of all our resolutions to the contrary, we find ourselves, as usual, encumbered with a host of varieties we know only by report. This season the total exceeds the hundred mark. When in 6-inch pots the plants are carefully observed, their manner of growth noted, also tendency to break, and liability to disease. The good as well as the bad points are almost certain to appear during the month or five weeks leading up to the final shift. Only such as promise well are shifted into the larger size, prob-

ably not more than 60%, and some of these will go, later. Varieties with a good reputation, but whose behavior has not come up to the standard, will be planted in the open, in a nicely prepared piece of soil, and if there is anything good in them, they will have a fair chance to show it. Then again some of the very best have a habit of running to bloom prematurely. I used to throw them out without further trial, but since I have found when I must persevere, that a goodly majority of such will after this blooming period is past, grow into good specimens. I learned this by planting out the surplus plants.

Stopping, or pinching in, commenced when the plants are in the smaller sized pots, must be continued in this; in fact, the pinching should not be discontinued until well into July. The plants must be looked at, every day or two. A plant well balanced now will keep so.

T. D. H.

The Flower Garden.

ORNAMENTAL BEDDING.

PART I.

Although carpet and ornamental bedding is not used as much as formerly, it still has its claim on recognition and its place in ornamental horticulture, and when the design is tasteful, the colors well chosen, the planting nicely executed, and the bed well taken care of, these bright bits of color on nature's green carpet seldom fail to win admiration.

The soil in these beds should be rather light and mellow; if too heavy, sand or ashes should be used to mix with it; if too light and sandy, then some soil of a heavier nature. Well rotted manure should be applied generously in spring, as the great number of plants in proportion to the space require lots of nourishment to insure good results. If the beds are planted with bulbs or pansies for early spring, they should receive an extra manuring before they are planted. In

digging the bed and preparing for planting, pulverize the soil finely, and if this cannot be done to satisfaction or if the design is complicated, surface it with one-half inch of sifted soil in which to draw; mark all the lines as you proceed with white sand, sawdust, corn meal or similar material to make the lines stand clear and distinct; this is especially advisable if the planting takes several days, or if it is interrupted by showers, as it is too much trouble to cover the beds except the smaller ones. It is necessary to have a low bench of sufficient length to place across the bed when designing, planting, trimming, or a plank put on a couple of blocks of wood will do. Occasionally when designing or planting one can step in with one or both feet, but this place must then be worked well with the trowel before planting, and it cannot be done when the soil is damp. The designing and planting, details of which will be given later, must be done as true and careful as possible; it is the making or the spoiling of the bed, and the time spent in getting it right is not wasted.

The trimming is of equal importance for further success and should be carefully and accurately done. It is, however, not so difficult a matter when we only bear in mind that each kind shall occupy its own allotted space, no more and no less. The main thing then is to keep the lines true and to watch that the stronger growing varieties do not press the smaller ones. For this reason it is advisable that one man does or superintends this important work and especially one who has helped to lay out and plant the design, as he then has a better judgment of the details. It is also well to have a sketch of the design at hand for comparison. First he trims all the lines, clipping sideways with the sheep shears, so that he cuts all the shoots that grow across the line from both sides; all points, small curves and similar details should receive special attention. After this is done, he uses the shears flat on top, trimming nice and even, either level or sloping as the case requires; for instance, if a combination of alternanthera and coleus, then the alternanthera should slope up to the coleus, while these should be trimmed hard at the junction to avoid breaks in the surface. Occasionally certain parts of the beds are raised over the surroundings, and they should then be trimmed accordingly. It is not necessary to pick up the trimmings, they wilt and fall to

the bottom. This trimming is for alternanthera, pilea, santolina and such small plants. Coleus, achyranthes, acalypha, etc., had better be pinched; it makes a better looking job.

Towards fall when the nights are colder less trimming is needed, as the growth then is slower. Just at this time of the year, when the colors are most brilliant, the beds are often spoiled by an early frost. This can be avoided with a few precautions, covering the beds at night with old carpets, sheets or similar material. The writer knows of a place near Pittsburg where the lady of the house every year has a couple of pretty design beds and keeps them till quite late in fall in the manner indicated, in fact so long that their brilliancy almost looks out of place in comparison with the surrounding sombre aspect of nature.

While trimming the bed, the edges of the grass also need attention; as a rule trimming with the shears is sufficient, but once in a while a sharp spade may be used. This trimming often brings the edge a little out of line one way or the other. For this reason the beds should be gone over each spring and corrected; to do this job as easy as possible, I have found it practical to mark all the main points such as centers of circles, foci of ellipses (ovals) corners of squares and diamonds and centers or guide points in the lawn used in outlining the beds with pieces of one-quarter inch gas pipe twelve or eighteen inches long, hammering them in even with the surface—if I cannot mark the center of a circle on account of setting an agave or such plant there, I mark the ends of a diameter. When the digging is done a little carefully these pieces of gas pipe do not interfere with any work, and when small pegs are stuck in the pipes the trimming of edges can be done quickly and precisely, and they also come handy for laying out the design, as they mark the principal points.

After these preliminary remarks when we turn our attention to the designing and laying out of carpet beds, I will say that it is a misconception commonly met that the design should contain lots of scrolls and small details; such a bed is hard to lay out and plant, and as a rule does not give satisfaction for the amount of work spent on it. A neat design, where each color has enough space to assert itself and to show the others to good advantage, no two shades of the same

color together, and with the design in proportion to the size of the bed, is much more pleasant to look at.

The implements necessary for laying out the design are tape line, twine, some wooden pegs about the size and length of a lead pencil, and a few stouter ones for the more important points. Besides these we have, of course, the working sketch on which all the measures necessary for construction are marked; then select a handy man for your helper, and you are ready for the task.

In the next issue I will explain how to proceed and give a few easy examples.

H. HANSEN.

BOTANY AT CORNELL UNIVERSITY, ITHACA, N. Y.

The department of botany was organized at the opening of the university in October, 1868. Professor Albert N. Prentiss, of the Michigan Agricultural College, was chosen professor of botany. The facilities for research and the space afforded for the botanical department at the opening of the university were very meagre, and continued so for several years. Nevertheless a large number of students were engaged in botanical study under the inspiration of Professor Prentiss. Considerable attention was given to the study of the flora in the vicinity, and a number of the enthusiastic students of the early period now occupy prominent positions in various institutions. In 1870-71, Professor Prentiss accompanied the Cornell Exploring Expedition to Brazil and made large collections. In 1875 Mr. W. R. Dudley, a graduate of the university, and who had been for for several years assistant for short periods, was appointed instructor, and at the beginning of the following year he was appointed assistant professor, a position which he held until 1892, when he was appointed professor of botany in Leland Stanford University. Opportunities for special work were improving, and the scope of the instruction was increased, especially in the direction of the study of the lower plants.

In 1875 the department moved to its permanent quarters in the south wing of Sage College, the foundations of which were laid in 1873, and built from funds given by the munificence of the Hon. Henry W. Sage. In 1881 the department had outgrown the rooms provided for it, and through the generosity of Mr. Sage an addition was built. At this time the present conservatory was erected adjoining the rooms of the department. The conservatory consists of five connected glass structures of different heights and adapted to different temperatures, the whole range being in extreme dimensions 50 x 152 feet. These improvements completed, they were formally opened by appropriate exercises held in the botanical lecture room on the evening of June 15, 1882. Brief addresses were made by President White and others. In the fall of 1882 Mr. Robert Shore was appointed head gardener, and placed in charge of the conservatories, a position which he has filled with eminent success, and which he still holds.

In the fall of 1888 Mr. W. W. Rowlee, a graduate of the university, was appointed instructor, and in 1893 was promoted to assistant professor. At the beginning of the year 1892, Professor Geo. F. Atkinson was appointed assistant professor of botany in place of Professor Dudley, who resigned to accept the chair of botany in Leland Stanford University. Professor Atkinson graduated



CONSERVATORIES OF BOTANICAL DEPARTMENT CORNELL UNIVERSITY.

from Cornell in 1885, and had for seven years held professorships in the University of North Carolina, University of South Carolina, and in the Alabama Agricultural College, where he became widely and favorably known through his investigations in botany. In 1893 Professor Atkinson was promoted to associate professor of botany, and in the winter of 1896 was promoted to the professorship of botany in place of Professor Prentiss, whose failing health at this time necessitated his withdrawal. Professor Prentiss was at that time appointed Professor Emeritus of botany, but died during the summer of 1896.

The staff of the department, as at present organized, is as follows: Geo. F. Atkinson, Ph. B., professor of botany; W. W. Rowlee, B. L., D. Sc., assistant professor of botany; E. J. Durand, A. B., D. Sc., instructor in botany; K. M. Wiegand, B. Sc., assistant in botany; B. M. Duggar, A. B., A. M., assistant in charge of experiment station botany; Robert Shore, head gardener, in charge of the conservatories; A. W. Murrill, B. Sc., Virginia Agr. College, scholar in botany. Beside the courses in elementary botany, advanced and graduate courses are now given in the following subjects: Taxonomy, histology, comparative morphology and embryology, mycology, etc. A special feature of the advanced studies is the seminary and research work. All of the members of the instructing staff are investigators, and contribute the results of research to the botanical journals of America and Europe. Professor Atkinson is also one of the associate editors of the *Botanical Gazette*.

Among the graduates from Cornell who have since been appointed to positions of prominence in the botanical world are the following: Atkinson, G. F., professor of botany, Cornell University; Arthur, J. C., professor of plant physiology, Purdue University; Coville, F. V., chief of the botanical division of the U. S. Dept. Agriculture; Dudley, W. R., professor of botany, Leland Stanford University; Durand, E. J., instructor in botany, Cornell University; Hough, R. B., author of "American Woods;" Kellerman, W. A., professor of botany, University of Ohio; Lazenby, W. R., formerly professor of botany, now of horticulture, Ohio University; Millsbaugh, C. F., botanist to the Field Columbian Museum, Chicago; Rowlee, W. W., assistant professor of botany, Cornell University; Schrenk, H. von, instructor in botany, Shaw School of Botany, St. Louis; Trelease, W., director of the Missouri Botanic Garden; Thomas, M. B., professor of botany, Wabash College; Ytabe, R., professor of botany University of Tokio; Bertha Stoneman, Ph. D., professor of botany in the Huguenot College, Wellington, Cape Colony, South Africa.

THE CONSERVATORIES.

This is the domain of Mr. Shore, and that he is fully qualified to preside over it becomes evident the moment one enters the houses. Botanical gardens, as a rule, are not noted for fine specimens of stove and greenhouse plants. That indeed is hardly their function, and it is next to impossible to grow well all the individuals of an extensive mixed collection under the same conditions. In this, however, Cornell is an exception, and Mr. Shore has not only succeeded in getting together a large and well assorted assemblage of plants admirably adapted to the purposes of botanical education, but he grows them in a manner calculated to inspire even



INTERIOR VIEW OF CONSERVATORY AT CORNELL UNIVERSITY.

veteran craftsmen with a wholesome and lasting respect for his proficiency.

And yet he is a modest man, more given to work than talking to about it. Some one has said that he makes his plants do the talking, and certainly they speak with an eloquence beyond mere words. There are no poor plants in the greenhouses of the botanical department at Cornell. In all seasons and with very limited facilities, they are thrifty and happy. Palms and cacti, orchids and bromeliads, ferns, nepenthes, and miscellaneous stock of every description, with a liberal proportion of florists' flowers, aquatics, etc., constitute as useful and ornamental an appendage of a public institution as may be found in the length and breadth of North America.

The department lacks a great deal in the absence of a garden proper for trees, shrubs, perennials, etc., but there is partial compensation for this in the beautiful campus overlooking Cayuga Lake and well adorned with representative groups of trees, shrubs and hardy flowers. One day, perhaps, some wealthy Cornellian will awaken to the needs of his alma mater in this connection, and then the nymphs with their preceptors may botanize in fairest groves while glory waits them.

Societies.

MONMOUTH HORTICULTURAL SOCIETY, OCEANIC, N. J.—A grand sociable was given by this society at the Redmen's Hall, March 23. The hall was very nicely decorated, and about fifty couples participated in the grand march. It was the best entertainment ever given by the society.

OTTAWA COUNTY HORTICULTURAL SOCIETY, GYPSUM, O.—On April 7 this society met for the usual transaction of business. William Bredbeck reported the prospects for fruit on the peninsula as being good. In reply to a question he stated that "one-quarter of the vineyards had been pulled up within the last year." T. W.

Payne read an interesting paper on "Roadside Improvements," which was followed by a lengthy discussion of the subject. It was decided to hold the May meeting Thursday, May 5.

STARK COUNTY HORTICULTURAL SOCIETY, NEW BERLIN, O.—This society met at the home of Michael Bitzer, March 16. The dining room and parlors were fragrant with flowers, consisting of hyacinths in bloom, carnations, callas, petunias, begonias, etc. C. Hole reported fruit trees in splendid condition, and the members discussed many matters of general horticultural interest.

DADE COUNTY HORTICULTURAL SOCIETY, MIAMI, FLA.—The red letter day of the Dade County Horticultural Society was March 15. All day there was a throng of visitors, many of them for the first time seeing fresh vegetables and fruits from the garden in this month. Many of them also had their first opportunity of seeing several varieties of tropical fruits that are on exhibition. The truck growers have sent in an unusually large supply. Mr. Frem, of Palm Beach, exhibited a collection of tropical fruits. D. B. Stephens, of Coconut Grove, sent in a large box of fine celery. Mrs. George A. Friar brought in a splendid sample of Florida butter. The Dade County fair is a genuine "eye-opener."

CHICAGO HORTICULTURAL SOCIETY.—We have received the preliminary list of premiums offered by this society for competition at the exhibition to be held November 8 to 12, inclusive. For the best specimens of tomato grafted on potato three prizes are offered, first, \$15; second, \$10; third, \$5. There are many new classes in cut roses and cut carnations, and the classes of all kinds in which prizes are offered now number 225. The prizes for chrysanthemum blooms and plants, also table decorations, have been very considerably enlarged. In all there are offered for this single exhibition some dozen silver medals, and cash prizes to the amount of close upon \$3000. Copies of the premium list may be had upon application to the assistant secretary, room 202, 185 Dearborn street, Chicago.

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A BUDS and blossoms excursion is the latest idea in San Jose, Cal.

A FLORAL festival will be held at Columbia, S. C., April 21.

NEW GAZANIAS raised in Italy are said to have very large flowers, which vary in color from creamy white to deep yellow, with markings of various other shades.

ONE of our correspondents reports that rabbits have eaten some of his hepaticas, and desires to know whether others have had a similar experience.

THE Louisville, Ky., park commissioners have employed John C. Olmsted and his assistant, Warren H. Manning, of Boston, Mass., to improve the parks of that city.

A CORRESPONDENT of the New York Times states that at Alfred University, in the southwestern part of the state, it was decided, after 25 years' experience in their collection, that the hepaticas and colts-foot should head the list of native flowers in New York State.

WELL PRESERVED flowers, says the *Christian World*, which have recently been discovered in Egypt, concealed within tombs of the earlier Pharaohs, have been placed in the Cairo museum. The commonest of these were white and blue lotuses, red poppies, leaves and flowers of the pomegranate, of saffron, and other species of crocus. It seems that the flowers of to-day are the same as flourished

then, and even the chrysanthemum had made its appearance in Egypt some 5000 or 6000 years ago.

PEA BLIGHT is said to be due to adverse physical conditions of soil, extreme drought, and the continual planting of the peas on the same ground year after year.

CANADIAN experiments, conducted with a view to the eradication of the common bindweed (*Convolvulus arvensis*), disclose the fact that salt is the most efficacious remedy.

THERE will be a start made on an arboretum in Humboldt Park, Chicago, on Arbor Day, when, in the presence of some thousands of children, a clump of maples will be planted on that portion of the grounds reserved for the purpose. The exercises of the day will conclude with speeches and singing.

TASMANIAN apples, to the extent of 34,000 cases, are due in London next month, and during the present month 570 boxes of grapes and pears arrived from the Cape. It is reported that the Cape grapes are wretched, and that English and Canadian apples are very scarce in the London market.

THE water hyacinth trouble continues to vex the good people in the neighborhood of the St. Johns River, Florida. Numerous experiments were carried on last summer by government officials, looking to a solution of the problem of devising ways and means to rid the river of the pest, but so far no practical remedy has been discovered.

PRELIMINARY tests of formalin, made in a greenhouse, under the direction of Prof. Arthur, of Purdue University, soaking potatoes for two hours in solutions of varied strength, resulted in no injurious effect upon the germination of the tubers and indicated that formalin is a successful fungicide for scab. The directions given are to soak tubers two hours in a solution of half a pint of formalin in fifteen gallons of water.

MINNESOTA has a law to encourage tree planting. A bounty of \$2.50 an acre is offered, and at least one acre must be planted, while no one person can collect for more than ten acres in a year or for more than six years. Any tree but the black locust may be planted. Last year bounties were paid to twenty-five counties for planting 9,524 acres. The law has been in operation sixteen years. In that time more than 100 000 acres have been planted in trees.

THE annual horticultural and agricultural exhibition was opened at Cairo on January 14, by the Khedive and other high officials in Egypt. There were exhibits of Egyptian pottery and timber woods. The soil of the country and its climate are considered to have great capabilities in forestry. The Finance Ministry is now conducting experiments along this line, having just planted out 190,000 young trees of about 100 different varieties, all exotic and chiefly from India. A novelty was shown in the shape of a substance called cerosie, which a French chemist claims to have discovered. It is procured from the scum which rises to the surface of liquid sugar after the cane is crushed. The substance has much the same qualities as ordinary beeswax.

THE Toronto Horticultural Society, which exists for the purpose of diffusing a better knowledge of horticulture and floriculture, proposes to present 1,000

plants to the children of the public schools, to be grown by them during the summer, and exhibited at the chrysanthemum show in the fall, when prizes will be presented for the best grown plants. It is also proposed by the society to initiate a movement looking to the establishment of a botanical garden in that city. With this object in view the principals of all the colleges are invited to co-operate, as well as the superintendents of the various parks and government institutions, so that any future planting required may be done with this object in view.

THE CULTURE OF HARDY ROSES.

At the March meeting of the Elmira, N. Y., Horticultural Society a paper was read on this subject by a thoroughly competent gardener, Mr. John B. Rudy, as follows:

A great deal could be said and written about roses, their varieties, their beauty and the origin of the many varieties, but I will simply tell you about hardy roses. There is nothing in the line of outdoor flowers so pretty as a well-flowered rose-bush, and with right has the rose been named "the queen of the flowers."

As it is about time when they require our attention, after their winter's rest or time to begin to plant young bushes, for all those who intend to do so, I think it will be well to tell you something about planting them. Roses require a deep, well-enriched soil, of a somewhat clayey nature. They should be planted in an open or prominent place in your garden or yard where they will get the full benefit of all the rain and sunshine. A good many people make the mistake of planting them close to a big tree or alongside of a house, and the result is a weak rose bush and hardly any roses; but should there be some roses they will be small and deformed. Should your soil not be as wanted, dig it out to a depth of about eighteen inches and as wide as you want your bed. Fill in with well-rotted sod to which has been added a liberal quantity of well decomposed compost and some pure ground bone, and firm you bed well, as the filling will settle considerably.

After you have your bed ready you can begin to plant your roses. Plant them as soon as the frost gets out of the ground and the soil is in such condition that it will handle nicely. Never plant when the soil is too wet, as in that case the earth around your rose bushes would get hard when dry.

You may ask me what varieties I would advise you to plant. That is very hard to tell when there are so many good ones. Get some old standard variety that has been proven good. Always go slow in novelties. You might try a few and you will soon find out if good or not. For red I should plant General Jacqueminot, Marshall P. Wilder, Louis Van Houtte, Ulrich Brunner, Alfred Colomb, Baron Bonstetten, Prince Camille de Rohan; for pink, Baroness Rothschild, Mme. Gabriel Luizet, Magna Charta, Anna de Diesbach, John Hopper, Paul Neyron, Captain Christy, Merveille de Lyon; for white, Mme. Plantier, Mabel Morrison, Coquette des Alpes, Coquette des Blancches.

In yellow there is only one good hardy rose, and that is the Persian Yellow. The Yellow Rambler is a climbing rose. The Harrison Yellow and the Persian Yellow are very nearly the same.

In getting some of the varieties from your nurseryman or florist, be careful and get good, strong and healthy plants. Avoid as much as possible agents, unless you know them or the firm they represent.

Many of them don't care and would just as soon sell you a white rose for a red one as not. Or the bushes may have been in a wagon or tied in bunches for a week, and when you get them they are almost dead. Deal with a party that you know or a firm that has always sent you reliable goods.

Just as soon as they arrive and everything is in shape you can begin to plant them. Some of the varieties that you have bought are probably on their own roots and some of them may be budded roses. Roses on their own roots are those that have been rooted from cuttings or layers from a rose bush of the same variety as desired. The latter are those where a bud or eye has been taken from one variety and budded on a sort of wild rose, commonly called Manetti stock.

Varieties that are hard and slow to propagate are generally budded because it is a quicker way to multiply them, and for this reason the nurserymen resort to it. If you should ask me which ones are the best I would have to tell you that, so far as I know, I have never seen any difference. You can get equally as good roses on their own roots as from budded ones. In planting budded roses, plant them deep enough so that the place where the bud has been inserted is covered in the soil. This is advisable for two reasons: First, it will help to prevent the shoots from the stock plant from coming up; second, it furnishes better support and the wind is not as liable to break the rose bush off. In case of roses on their own roots you can see how deep they have been planted. Just plant them as deep or a little deeper than before. Plant them about three feet apart each way and firm the soil around them well.

After you have all your bushes planted you can begin to trim those you have just planted as well as those you planted last year and all the others. Cut out all weak growth; select three or four good shoots and cut them back to two or three eyes on last year's growth. You cannot spare your pruning knife if you want good, healthy foliage and nice, large roses; they will also be more free from insects and disease during the summer. Pruning is one of the essential requisites in the success of hardy roses. Some varieties will not stand severe trimming, such varieties as Mme. Plantier, Persian Yellow, Moss and all the climbing roses. Remove all dead wood and some of the straggling shoots to keep them in a neat, compact way.

Now spade in a liberal quantity of compost and your bed is ready. As the nights get warmer and the days longer you will find them swelling their buds, and in a few weeks a nice young growth will cover them. Keep a close watch and see that they are free from aphids, or green lice, as they are called. For they are very fond of the soft growth on roses. Should they make their appearance, get some tobacco stems; you can get them from any cigar factory. Take about one-half pailful and fill the pail with water; let stand over night, take the liquid and dilute with water to the desired strength. Spray all the affected bushes and you will kill all the lice. Go over them once in a while as they need it; as soon as the buds appear and they begin to show their color you will not be able to fight them, as tobacco will spoil the flowers.

The weather will now be warm and dry. You must not let your rose bushes suffer for water. Syringe them mornings frequently. Be sure you get on the under side of the foliage. This will prevent the red spider and white thrip, and will help

the roses wonderfully. A light mulch around and underneath the bushes to a depth of about two inches will help to retain a good deal of moisture in the ground. Use well-rotted compost or the rakings off your lawn after it is mowed. Be on the lookout for any shoots that may come out of the ground from the budded roses. Should they be from the Manetti stock, remove carefully; dig down and cut them off close to the parent stock.

As the buds develop, disbud carefully. Remove all buds but one on each shoot. This will greatly increase the size of your roses. Bushes treated in this manner should give you first-class flowers, and you will not have any trouble in surprising your neighbor. As you take him over your patch of roses, here you will see the lovely rose standing proud and smiling at you with all its grace and beauty. There, behold, winks Louis Van Houtte, as much as to say, "Come, look at me!" Alongside is Mabel Morrison, so white and so pure, with petals as if carved out of wax. Around are numerous other varieties in all their glory, beauty and fragrance. Who would not enjoy such a scene?

The following season you must not neglect your rose bushes. Keep them free from weeds and insects. Then a good deal depends on the care you give them for the next season. The rose bug will curl up some of the leaves. Go over them and pick off all such or get a smart boy to do it for you. Syringe frequently to keep down red spider and white thrip. I do not wish to convey the idea that you must keep your rose bed soaked, as that would be very injurious to them. Just spray the foliage well in the morning; but should the soil get dry, why, just give it a good soaking; then withhold until dry again.

In the fall of the year, as the nights get cold and the days very warm, the tops will keep the foliage wet into mid-day, and mildew and black spot will usually affect your bushes. You can usually kill mildew with flowers of sulphur by keeping the foliage well powdered. But black spot is a bad disease. It is caused by too much moisture and dark, cloudy days. It will first show itself in very small spots, but in a few days it will have almost all the foliage off the bushes. Bordeaux mixture will not cure it, but it will help to prevent it. By taking all these precautions and keeping your bushes healthy you will get a number of good roses late in the summer, and, on some varieties, until frost nips them and the last rose of summer will have gone. In a few weeks they will drop their foliage and once more will take the rest they need for next summer's rose show. As soon as the wood is well ripened you can cover them. Usually about the middle of November dig around them and bank them up with soil ten or twelve inches; afterwards cover with compost or litter and they are ready for winter. In the spring take the soil away from them, trim as before, and again they will respond to nature's call: "Awake and help to beautify!"

STATE FLORAL SOCIETY, SAN FRANCISCO, CAL.—This society has decided to hold its annual spring show at Golden Gate Hall on the afternoons and evenings of the 12th, 13th and 14th of May. Cash premiums will be offered and an effort made to interest amateur flower growers. President E. J. Wickson called attention to the fact that during the summer many of the prominent sweet pea growers would be in California, and it was decided to make the June show entirely of that flower, and notify Dr. Wm. Hutchins and others to talk on its care and propagation.



ROBERT SHORE.

WORKERS IN HORTICULTURE, VII.

The subject of our portrait on this occasion is a professional gardener, Mr. Robert Shore, of the botanical department of Cornell University, Ithaca, N. Y., to whose abilities some allusion is made elsewhere in the present issue. Mr. Shore is a native of Ireland, and began his successful gardening career in that country at the age of 16 years. Later he was employed in the Liverpool Botanic Garden under Mr. Tyerman, had charge of the plant and fruit departments at Hewell Hall, Worcestershire, and held a similar position under Mr. W. Speed, Penrhyn Castle, Wales. Coming to this country in 1870, he held various good appointments around New York and along the Hudson, when he was requested to take charge of some important work on the Fisk-McGraw estate, Ithaca, N. Y. Leaving there on the death of his employer, he was tendered his present position, which he has occupied during the last fifteen years.

Fruits and Vegetables.

VEGETABLES FOR THE HOME GARDEN.

Every man who owns or rents a place large enough to contain a vegetable garden has probably already selected his varieties and procured seed for the coming season. Experience teaches which varieties are best adapted to given localities, and decides the question of personal preference. There are many, however, who are about to plant their first garden, and who must select varieties without the guide of their own experience. For the benefit of such, a few notes may not come amiss.

Radish seed may be sown as early as the ground can be prepared, in drills and covered about one-fourth of an inch. Later the plants should be thinned to two inches apart. Scarlet Globe is the earliest, though French Breakfast is a good variety. Long Scarlet Short Top will do for a late variety, though many prefer to make several sowings of the early varieties. Late radishes are more liable to be attacked by maggots than early ones,

but they can be kept out to quite an extent if the soil be covered to the depth of one-half an inch with fine coal ashes. Lettuce for the home garden may also be sown in drills and not transplanted, or the plants may be moved wherever wanted. For a curly lettuce, Grand Rapids is a standard variety. Boston Market or White Seeded Tennis-ball is a popular sort. Cos lettuce requires blanching, either by tying or by banking with earth. As with radishes, always make several successive sowings so as to have lettuce fresh and crisp for the table.

Peas may be sown very early. Little Gem, Alaska and American Wonder are good for an early crop, while for late the Champion of England is still a popular variety. Successive sowings of peas may be made. As a rule, mildew is more liable to attack peas in late than in early summer, so the crop is somewhat lessened. Beans may be planted either in hills or drills, but not until the ground is warm and dry. My preference for an early string bean is the Dwarf Golden Wax. This has yellow pods. If a green podded sort is desired, Early Red Valentine is a good one. For shelled beans to be eaten green the Limas are superior to others. The dwarf or bush sorts are better for general garden planting than the pole sorts. Burpee's Bush Lima and Henderson's Dwarf Lima are commonly cultivated. Dreer's Improved is a good pole variety. Lima beans are also used dry. For baking, no varieties excel the old Pea sorts, several varieties of which are now on the market.

No vegetable is more delicious or more deserving of a place in the kitchen garden than the cauliflower, yet the crop is often a failure in many gardens. Seed may be sown in the open ground in May and the plants should be transplanted in rows two feet apart in the row. The soil should be well supplied with moisture and not too rich in plant food, as the plants will not head as well. The same is true in growing cabbages. Dwarf Erfurt and Early Snowball are excellent varieties. For cabbages, Early Jersey, Wakefield, Winnigstadt and Late Flat Dutch will give a good succession.

Sweet corn is a most desirable adjunct, and I should not plant a garden of any size and omit it. The kernels should be planted in hills or drills during May, at a time when the earth is warm and dry. For early, Cory is a good sort, while for late varieties Country Gentleman and Stowell's Evergreen are standards. The cucumber, too, must be given a place. Early Russian will give a small crop early in the season, and White Spine is a good all-purpose variety. Eclipse and Early Egyptian for beets, Early Scarlet Horn and Long Orange for carrots, Large Sugar for parsnips, and Early White Flat Dutch for turnips are standard varieties, and one will not go far amiss in planting them. Perfection, Beauty, and Lorillard, are good varieties of the tomato for outdoor culture. If onions can be grown, White Portugal, Yellow Globe Danvers and Prize-taker will be found good varieties. By all means plant a bunch of chives to use in early spring for flavoring.

Many other delicious vegetables, such as rhubarb, celery, asparagus, egg-plant, melons and squashes, should also be planted if there is room in the garden. We might also say potatoes, but the potato is now grown so extensively in field culture that many prefer to exclude it from small gardens and purchase the supply. In a short article of this kind it is impossible to speak of all the good varieties. There are many new ones, but I

have mentioned those which have been tested by years of culture, and which will be likely to succeed generally in most places. As a rule, it is best for the amateur to select standard varieties for his gardening operations. W. E. BRITTON.

New Haven, Conn.

GRAPE NOTES.

There are grown here a collection of some sixty-eight varieties of grapes, all carefully selected and tested. The last candidate for public favor, Campbell's Early, I consider the best that has come under my observation. It fruited here the first time last autumn. On account of its good qualities—hardiness, earliness, attractive appearance, berries adhering long time to bunch after ripe and not easily bruised—it is valuable for transportation. Its originator, for whom it is named, is a gentleman well known to pomologists throughout the country. He has been engaged in the work of hybridizing grapes nearly forty years, and success has ultimately crowned his efforts in the production of this sterling variety.

With regard to the culture of grapes, there is nothing new to experienced growers; but for the benefit of amateurs it may be said that the best results are produced only on well prepared soil. If not naturally well drained, then it should be under drained. There are many modes of pruning, but I have been most successful with the renewal system, producing new canes annually and allowing half of them to fruit the second or third year. After planting in November, the canes that fruited in any given year should be removed, allowing the others to fruit during the following year. I think more fail by leaving too much wood rather than too little. I would not recommend amateurs to cultivate for home use more than eight or ten kinds, and in most cases they will be as well satisfied with a half dozen kinds. I have never used anything but flowers of sulphur on the vines, distributed with a bellows made for the purpose, and as a rule the foliage has been kept in healthy condition. It may have been necessary for others, but I have never made use of any of the poisonous preparations so strongly advocated.

BENJAMIN G. SMITH.

Cambridge, Mass.

STRAWBERRY NOTES.

Prof. Troop gives the following timely suggestions as to the selection and culture of strawberries in a recent bulletin of Purdue University Agricultural Experiment Station, Lafayette, Indiana:

The list of strawberries grown on our experiment grounds the past season, comprised eighty-six varieties, the most of which are of comparatively recent introduction, a few of them having fruited but a single season. Many of these seem to possess some good qualities, while some have done only moderately well, and a few will be dropped as unworthy of further trial. Our list of strawberries has become so large, we cannot afford to spend time on a variety unless it soon shows that it possesses some good qualities which other older varieties do not. These good or bad qualities do not always manifest themselves the first season, and so we have made it a rule not to discard a variety until it has been on trial for at least three years.

The requirements for profitable varieties of small fruits are much the same as for orchard fruits. If a variety is wanted for market, the principal points to be considered are its ability to carry well

and look well when placed upon the market. For strawberries, then, these desirable points might be named in the following order:—(1) solidity or firmness, (2) brilliancy of color, (3) size and shape, (4) flavor. Flavor plays a very insignificant part in the large strawberry markets, where fruit is sold on its general appearance. Of course, in order to produce these desirable qualities, the plant must be naturally productive, a vigorous grower, with healthy foliage, so that there may be no check to the growth of the fruit from start to finish.

If the variety is wanted for the home garden, the same qualities of plant are essential, but flavor should be placed earlier in the scale of points. Among the newer varieties which may be favorably mentioned, are the following: B indicates a perfect blossom, P indicates a pistillate blossom.

Beverly (B).—Ripens early, a vigorous plant, productive, fruit large, very firm and of good quality.

Bird (B).—Very desirable for the home garden.

Brandywine (B).—When grown in hills, it produces a magnificent crop of fine fruit.

Brunette (B).—Medium in size, but for richness of flavor it should occupy first place.

Clyde (B).—One of the most productive varieties in the whole list. Ripens early and continues through the season.

Howard (P).—A desirable berry for either the home garden or the market.

Quality (B).—As the name indicates, it possesses excellent quality. Plant vigorous and productive under high culture.

To the above list should be added for general cultivation, these well known varieties:—Beder Wood (B), Bubach (P), Edgar Queen (P), Eureka (P), Gandy (B), Greenville (P), Haverland (P), Jessie (B), Parker Earle (B), Shuster (P) and Warfield (P). The last is the best of all for canning.

Miscellaneous.

HINTS ON PRIZE LISTS FOR DAHLIA SHOWS.

A prize schedule should contain sufficient classes with an ample number of good prizes in each class to call forth the best competitors. In accounts of English dahlia shows I have found sixth, seventh and eighth prizes not uncommon. The inevitable result of so extended a list is to stimulate and encourage the widest competition, which in its turn reacts to arouse public interest in the exhibition.

The following schedule is offered as being sufficiently comprehensive for the largest special dahlia show and as capable of adaptation by proper selection to the smallest county fair. No number or value of prizes is indicated as this must be determined by the special circumstances of each case.

A. Largest and best collection, all sections, not less than varieties.

B. Show dahlias: 1, best collection; 2, best 25; 3, best 12.

C. Finest dahlias: 1, best collection; 2, best 25; 3, best 12.

D. Pompon dahlias: 1, best collection; 2, best 25; 3, best 12.

E. Cactus dahlias: 1, best collection; 2, best 25; 3, best 12.

F. Decorative dahlias: 1, best collection; 2, best 25; 3, best 12.

G. Single dahlias: 1, best collection; 2, best 25; 3, best 12.

In special shows where there is sufficient material from which to draw there should be added a class of fifty in each section

perhaps a class of 100 in the show and pompon sections. To the above, which may be termed formal classes should be added in liberal variety prizes for design and decorative work, arrangement for effect, plants in pots, general display, etc.

Furthermore, in a special exhibition every encouragement should be extended to the display of practical appliances for the growth, transportation, preservation or exhibition of the flower in question. I should be greatly pleased to see in the columns of the AMERICAN FLORIST any suggestions bearing on this subject. Provision ought to be made whereby the judges can make special award for a feature which is novel or of special merit. Prizes for new varieties of merit are always in order. Judges should be at liberty to withhold prizes from undeserving exhibits, and this fact should be clearly stated in the schedule that the disappointed aspirant may have no ground for complaint.

Section A should appear on the premium list of every agricultural or horticultural society in the country which holds a show at the proper season. The next step towards extending the schedule should be to add class 1 or class 3 in each section or both. Any further extension of the schedule would naturally follow in the same line. In classes 1, 2 and 3 of sections D and G not less than three blooms of a kind should be required, as individuals of the pompon and single varieties fail to do themselves justice when standing alone, especially in the presence of more brilliant company. If desired classes could be added for the cactus and Tom Thumb varieties of singles, the dwarf growing show dahlias, etc. In all classes except A named varieties should be a requirement. Several very interesting classes could be formed from a given number of a specified color as six or twelve white, yellow, scarlet, etc., and such classes would be particularly instructive by bringing similar varieties into direct comparison.

H. F. BURT.

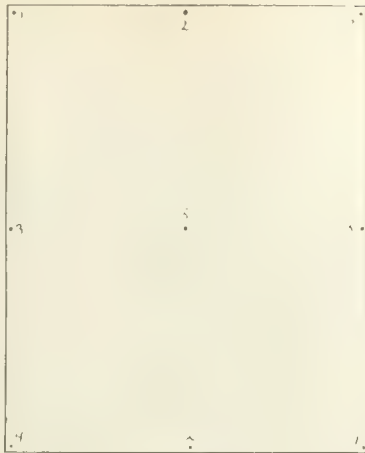
DESIGN FOR A CEMETERY LOT.

ED. GARDENING:—I enclose plan for planting a cemetery lot 40 x 50 feet, with trees in sites, all evergreens, namely, golden English yew, erect English yew, Irish yew, Sargent's weeping hemlock and either *Magnolia grandiflora* or Swiss stone pine. Can, or will you, substitute anything better? Retinosporas do not suit our climate. Soil sandy loam, well drained and open to winds from all points.

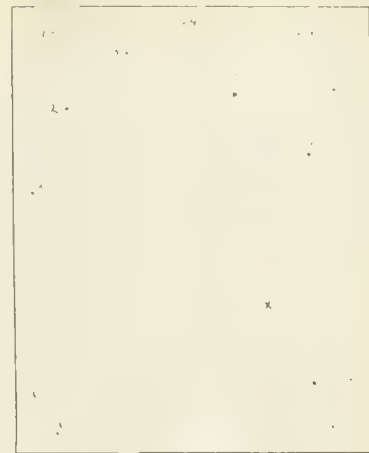
Charlottesville, Va. C. H. HEDGES.

In making a design for the planting of trees and shrubs, it is next to impossible to do the matter justice without seeing what their surroundings are to be. In this correspondent's plan for the planting of his cemetery lot, the first suggestion may be in respect to its arrangement. It is supposed that a drive passes by its lower side. Instead of planting the trees symmetrically as he has placed them, they might be grouped at the side opposite the drive, forming a bay, as in the accompanying design. This would relieve the formality and stiffness, and form a background for the picture.

The character of trees which he might select seems also capable of improvement. Those which he has chosen are very stiff and formal. Evergreens of a freer character, such as the various pines, white, Austrian, dwarf mountain and the hemlock and others adapted to the region, would be more satisfactory. Furthermore, evergreens alone, and especially in



Original Plan



Improved Plan

PLANTING A CEMETERY LOT.

1 Golden English yew 2 Irish yew 3 Sargent's weeping hemlock 4 Erect English yew 5 Swiss stone pine or *Magnolia grandiflora* 6 Spruces 7 Weigelas

a cemetery, are decidedly sombre. If they were lightened up by a few deciduous shrubs at the front, such as weigelas and others, as the diagram indicates, the place would be much brightened.

Of the two trees at the center of which a choice may be made, the magnolia is much the better. If the tree is to serve as a monument, its position at the middle of the lot is appropriate. Unless this is the case, it seems better to place it at the back, as indicated in the plan. A tree-monument is exceedingly fitting. In such a case a tree like a magnolia, an oak or a maple is very satisfactory. If none are to be used for that purpose, such a tree near the margin, say at the point X in the diagram, might be good, where an additional tree of that character on a lot of such size might be an improvement.

The sketch is a mere hint rather than a design. The whole object of the changes suggested is to relieve the cemetery lot, and through it the entire cemetery, of that formality which seems so cold and dreary to those suffering from grief. It is better to substitute in its place something more cheerful and attractive, surroundings which we should prefer to think of in connection with departed friends.

A. PHELPS WYMAN.

COWSLIPS.

The inquiry of "Querist" under this head in our last issue has resulted in a surprisingly large number of replies, from which we select the few following as the most interesting and representative:

Caltha palustris is commonly known as cowslips here (Illinois) and makes a very palatable mess of greens. The leaves, flowers and flower stems are all cooked together.

R.

I think "Querist" is mistaken about the name cowslip being used in England to designate *Caltha palustris* but in portions of New England this plant is generally called cowslip and the leaves are very frequently used as a pot herb or for greens, as they are called.

WM. F. BASSETT.

Caltha palustris used to be known in some parts of the Midland counties of England as "horse-blobs."

"Beneath the shelving bank's retreat,
The Horse-Blob swells its golden ball." Clare.

The young flower buds were formerly pickled in the manner of capers and "sturtions," and the vinegar seemed to have the effect of modifying or even destroying their acidity.

JAMES MACPHERSON.

In response to inquiry regarding *Caltha palustris* being known in England as a cowslip, I may state that the "Dictionary of English Names" mentions only the following as its common names: "Boots," "Common marsh marigold," "Golds," "Goldins," "Mayblobs," "Meadow bright" or "Meadow bout," "Meadow gowan," "Water buttercup," "Open gowan" and "Yellow gowan."

The common name, cowslip, is applied to several genera, viz.:

Pulmonaria officinalis.....Bedlam cowslip
Pulmonaria angustifolia.....Blue "
Primula suffrutescens.....California "
Lachenalia.....Cape "
Dodocatheon Meadia.....American "
Primula Auricula.....French "
Primula Auricula.....Mountain "
Mertensia Virginica.....Virginian "

I know of no instance where the caltha is used as a pot herb.

W. C. E.

WHEN SOME TREES BLOOM IN VERMONT.

Willows and alders come first into bloom about March 25 to April 10. The wild plum and cherry trees come into flower about May 5 to 10. The common elder (*Sambucus Canadensis*) flowers May 10 to 20. Among trees the red maple is one of the first to put out, and shows its blossoms about April 1 to 10. The flowering seasons here are comparatively short, and each successive species bursts suddenly into bloom when its time arrives.

Burlington, Vt. F. H. WAUGH.

ELMIRA HORTICULTURAL SOCIETY, ELMIRA, N. Y.—The monthly meeting of the Elmira Horticultural Society was held April 11, in the Y. M. C. A. parlors. There was a good attendance and great interest was taken in the proceedings. In the absence of the president, the Rev. E. M. Mills, Vice-President Harry N. Hoffman presided. The secretary read a report of the executive committee and the list of premiums for the forthcoming floral exhibition, which will be ready for distribution in the near future. It was thought advisable to offer money prizes rather than articles relating to gardening, etc.

CATALOGUES RECEIVED.

Isaac Hicks & Son, Westbury Station, N. Y., trees, shrubs, vines, flowers and fruits; Valentine Burgevin's Sons, Kingston, N. Y., trees, plants, vines and shrubs; Richard Vincent, Jr. & Son, White Marsh, Md., vegetables and plants; Peter Lambert, Trier (St. Marien), Germany, shrubs and plants; The Holland Bulb Co., Oegstgeest, Holland, bulbs, roots and plants; Elm City Nursery Co., Edgewood, New Haven, Conn., trees, shrubs, vines and fruits; V. Lemoine & Son, Nancy, France, plants; J. N. Kidd, St. Joseph, Mo., plants, seeds and bulbs; P. S. Peterson & Son, 164 La Salle St., Chicago, Ill., trees, shrubs, vines, plants and fruits; Horace Rimby, Collegeville, Pa., plants, seeds and bulbs; Vance Boiler Works, Geneva, N. Y., heating apparatus.

Siebrecht & Son, New Rochelle, N. Y., plants; J. F. Wilcox, Council Bluffs, Iowa, plants; E. Y. Teas, Irvington, Ind., trees, shrubs and plants; W. L. Swan, Oyster Bay, N. Y., seeds, bulbs and plants; Lothrop & Higgins, East Bridgewater, Mass., plants; L. L. May & Co., St. Paul, Minn., plants; Thompson's Sons, Rio Vista, Va., fruits; Barr & Sons, London, England, seeds; Sutton & Sons, Reading, England, seeds.

MISSOURI VALLEY HORTICULTURAL SOCIETY.—Forty members attended the meeting of this society, held March 19, at the Coates House, Kansas City. Cold storage of apples was the subject for discussion. After exhaustive experiments it was clearly shown that fruit spoils within two days after being taken out. Apples ought to last at least two weeks after being taken out of storage, and any system was pronounced a failure that had the opposite effect. E. P. Diehl, of Olathe, presented the society with a historic gavel made from the trunk of an apple tree that was planted at Osage Mission in 1837. J. H. Durkee read a paper on "Pears." A. Chandler told of the best methods for ground planting.

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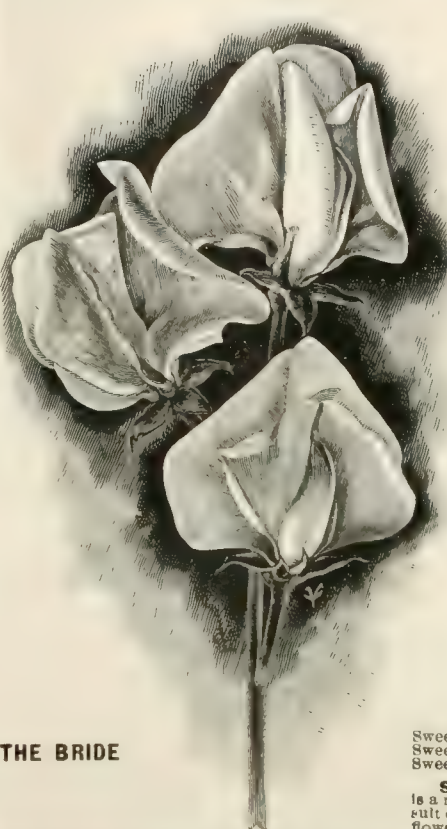
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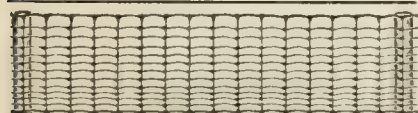
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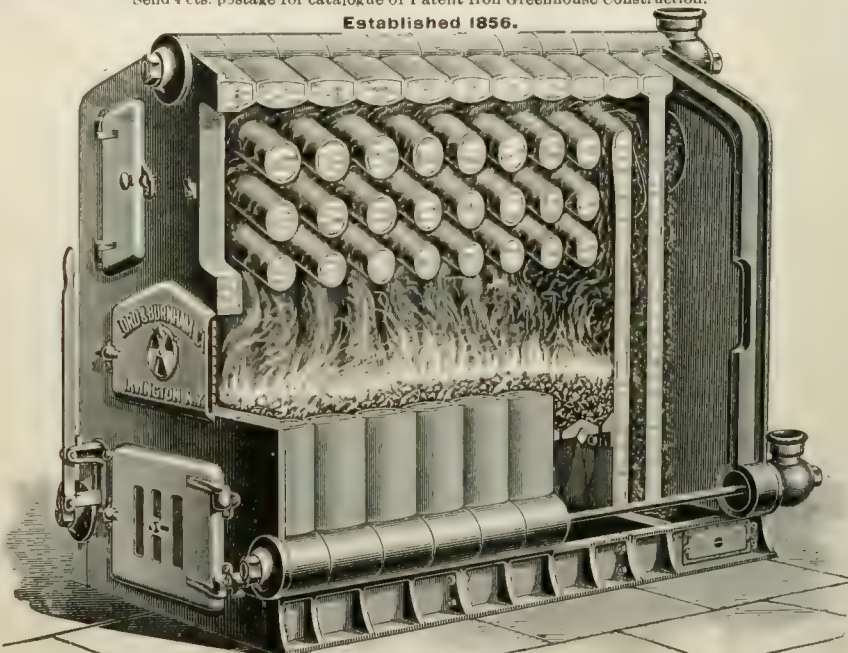
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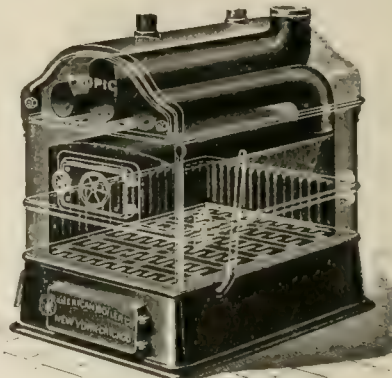
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The Flower Garden.

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Plants in the herbaceous borders had an unusually early start this spring. The mild weather during March favored the early development of the spring flowers and many of the plants which in ordinary seasons would not be ready to bloom until the middle of April were almost fully out in the latter part of March. Especially noticeable was this in slightly sheltered positions, on southern slopes or on the sunny side of hedges, buildings or tight fences.

We had a few clumps of *Primula*

acaulis in a southeastern exposure well covered with their showy pale yellow flowers long before April, while those planted under tall trees, though plenty of sunlight could reach them all day, have not yet (a month later) fairly developed their flowers. The former clumps were out at the same time with the scillas and snowdrops, both of which are past now, but the primulas are still as fine as at the beginning and will hold out, apparently, for a long time to come. A few hybrids of *P. acaulis*, which were planted last season, show great variety in color, golden yellows, pale and coppery red shades, velvety brown and deep, dark crimson purple, but most of them do not show their near relation to *P. acaulis*, producing their flowers in umbels on

stems not so tall as in *P. variabilis* or *P. officinalis*.

The large leaved saxifragas sent up strong spikes of their finely colored flowers and were nearly at their very best when, early in April, a few nights of severe frost threatened to destroy their beauty; but only in the most exposed situations did they suffer any, and most of the plants are as attractive to-day as they were before the cold snap. Aubrietias in variety were among the earliest flowers in the border; they form a dense green cushion in winter, and as soon as the frost is out of the ground the buds make their appearance, opening out one after another until the whole mat is covered entirely with pretty bloom, varying in color from pale lilac, almost white, to

deep blue and purple, and we have them also in pink and reddish tints. They are most desirable plants for spring gardening, and when combined with any of the dwarf phloxes, arabis, alyssum, primulas, etc., can not be surpassed by any display in a bed of early bulbs. These plants, moreover, will retain their beauty for a much longer time than tulips or hyacinths or any of the spring flowering bulbs.

The hepaticas were out in good style a month ago, yet not one of the little flowers has dropped a single petal up to date and buds are still coming up among the bronzy young foliage; but this is only true with the old, well established plants which have not been disturbed for some years. We can not reasonably expect such an abundance of flowers from plants one year old, but when they are once well established in a spot, few plants are equal to them for supplying early bloom in our gardens; and they may be planted in places where most plants would refuse to grow at all, on dry knolls, under the shade of trees and in the poorest soil they will always reward us with a profusion of flowers in early spring and do not need any attention for the rest of the season; their long roots are capable of finding enough moisture in the ground in the driest weather.

Another beautiful little plant for early spring is the charming *Anemone thalictroides*. The pure white flowers are produced very freely on elongated stems; it continues to bloom for several months, and its finely cut, trilobed foliage is hardly less attractive than the flowers. The habit and growth is very neat and and graceful, though the plant only attains a height of from four to six inches at best. *Mertensia Virginica* has opened its lovely flowers of a peculiar shining shade of blue; it blooms freely in almost any position, but probably lasts best when planted in partial shade. The pulmonarias are now densely covered with flowers. On first opening they are red and turn to blue afterward, the cymes showing both colors distinctly at all times. *Arabis* has made a splendid show since the first of the month with large heads of white flowers; this is among the handsomest of perennials early in the season. *A. rosea*, with lilac pink flowers, somewhat small in size but very early, deserves to be grown more generally; it is out as soon as the snow disappears. The golden *Alyssum saxatile*, too, is now very prominent in the borders; its remarkably free blooming qualities and bright cheerful color call for the admiration of everybody.

Phlox subulata gives us sheets of white or pink wherever they may be allowed to spread; no foliage is visible so long as the flowers last in perfection and the plant grows only a few inches high, perfectly smooth and even. *Iris pumila* is conspicuous in many places at present; it increases and spreads rapidly and produces a pleasing effect among the smaller spring flowers. *Doronicum Austriacum* and *D. Caucasicum* are among the few early blooming plants which grow a little taller than the average and are most serviceable to relieve the monotony of a smooth surface in an extensive patch of creeping or dwarfer things; the large, bright yellow daisy-like flowers are very acceptable so early in the season. *Polemonium reptans* has been opening its charming blue flowers for a week past; the plant is neat and graceful in appearance; it will not lose its floral attractions for a month yet or longer, and the foliage is handsome throughout the season.

Caltha palustris fl. pl. was in flower

with us during October and November and is now again in grand shape, though for earliness the ordinary single variety is two or three weeks ahead of it. Most people have an idea that the calthas can not be grown successfully in an ordinary border, that a marshy or wet place must be prepared for them. This is an error, for we have grown them for years in rather dry situations, exposed to the full action of the sun at all times and have not noticed any bad effect resulting from this treatment. The sanguinarias have sprung up with leaf and flower sometime since and may last a great while yet if the weather keeps moderately cool, but a few hot, dry days would finish them.

Saxifraga Virginensis is not much grown, but I like it in the border, for it flowers early and usually lasts into June. The small white flowers are produced on a branched, compact stem, eight to ten inches high, and they are really pretty. *Tiarella cordifolia* has long and erect slender spikes of interesting small white flowers, growing from ten to twelve inches high; they spring from a dense mass of pretty foliage. The plant succeeds in almost any place, but is especially adapted for rock work. The large flowers of the yellow *Adonis vernalis* appeared in the latter part of March, and are still in good condition. When planted in bunches or patches this is an ornament in the border, but small single stools are lost sight of among the surrounding plants unless these are very low. In some places they refuse to establish themselves as readily as ordinary things, but where they can have the benefit of a moist, well-drained soil, success is almost certain. They do not like to be disturbed at the roots and should be let alone for some years. The foliage is cut and lacerated into narrow segments and is very ornamental during the spring months; the plant attains a height of ten or twelve inches.

Rochester, N. Y.

J. B. KELLER.

BEDDING PLANTS.

The following timely paper on these plants was read before the Chicago Florists' Club by Charles J. Strombach, April 28:

The subject, I think, is pretty well thrashed out already, but as you wish me to say something I will state what plants we use for bedding in Lincoln Park. For early spring effect tulips, hyacinths and crocuses are planted the fall previous in fields of separate colors or in mixture. The effect is good and pleases the general public for a couple of weeks. Pansies are also in bloom at the same time; I sow the seed at Christmas and grow them along all winter, and by doing so get them to endure the heat better than the fall-sown plants, which are more slender and wiry and so cannot stand the hot weather as well as those grown in the winter.

After the tulips are ripened off they are taken up and stored away; the beds are manured, dug and planted with geraniums of varieties suitable for bedding; Mrs. E. G. Hill, salmon pink; La Favorite, double white; Bruant, scarlet; Rev. W. Atkinson, dark velvety scarlet; Invincible, semi-double crimson. *Ageratum*, Cope's Pet, blooms all summer if not given a too rich soil or too much water. Begonias are valuable as bedding plants; they will bloom from spring till fall if fairly strong at planting out time. *Torenia Fournieri* is also a good bedder, and if not sown too early—say middle of March—will bloom till frost. Its pretty violet-purple, pansy-like flowers marked with yellow in the

throat are by some persons called "Johnny-jump-ups."

Pentstemon campanulatus varieties are effective for bedding sown from seed or propagated from cuttings; fairly strong plants in 3-inch pots will bloom early and continue till frost. The roots can then be taken up, trimmed back and kept in a temperature of 55° or 60° through the winter, when the plants can be again used for bedding. *Vinca alba*, *V. alba-oculata* and *V. rosea* are elegant bedders, flower all summer and have grand dark green glossy foliage making such a fine contrast with the flowers.

Ten-week stocks are good for early bedding if well grown. We sow the seed in the latter part of January, prick out in boxes when big enough to handle, plant in 2½-inch pots after fourth or fifth leaf appears, using sandy loam. When well rooted in this, pot up in 3-inch pots, to remain till planting out time. As soon as flower buds appear we can select the double ones to be planted out. They make a grand show till the middle of July when they must be replaced by *Celosia cristata nana*, which is in 4-inch pots at that time and remains in good condition till fall.

Single petunias of good varieties are useful for bedding, as they give a profusion of flowers all summer. *Gomphrena globosa* is valuable for its heads of brilliant and enduring tints. *Phlox Drummondii*, if sown in April will bloom till fall, but if sown earlier it will lose its vitality in the latter part of August and must be replaced by something else. Verbenas have been used in park bedding to good advantage in years past, but for the last few years in the latter part of August they became mildewed, which injured the effect of the garden.

Cannas are used to a great extent here and produce a brilliant effect with both flowers and foliage. I have forty varieties, but the most prominent at present are Egandale, Chicago, Florence Vaughan, Stella Kanst, Madame Crozy, Souvenir d'Anton Crozy and Queen Charlotte. All of these are, as you all know, great acquisitions to the flower garden because of their great blooming effect. Carpet bedding is still retained to some extent to please the general public, but we draw a little away from it each year.

A great many annuals that I used to grow for bedding in the Old World are not of much use in this climate, as their duration is short when hot weather sets in and we must try to keep our beds in presentable condition all summer without too much labor. There is no doubt in my mind that our flower garden and bedding will receive some of our most beautiful perennials in time, but we go a little slow because if we go too fast we may be condemned by the public, as it has become accustomed to the present system or fashion.

ORNAMENTAL BEDDING.

PART II.

If the bed is not already outlined, put a stout peg where you want the center *a* to be, and lay out the circle with a radius of four feet six inches, making an eye on the twine big enough to slip around easily on the peg, measure the distance on the twine with the tape line, at the desired point wind the twine a couple of times around another peg and with this make the circle, while your helper holds the center peg steady. Then prepare the bed as formerly directed and the work can go on again; draw the circles *b* and *c* with radius four feet two inches and

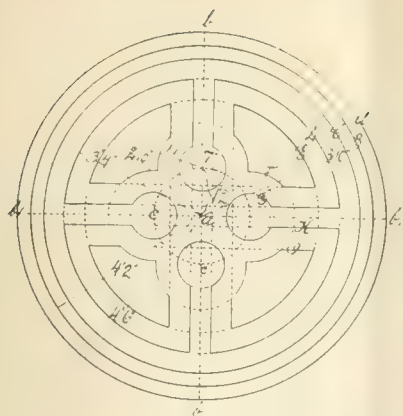


Fig. 1.—A circle, diameter nine feet.

three feet ten inches respectively, mark these circles with sand or whatever you use. After this draw circles *d* and *e* with radii three feet four inches and two feet ten inches, divide the outline (circle *a*) in four equal parts, try with tape line and pegs until you get it right, place a peg in each of these points, *b-b* and *b-b'*, tie a piece of twine from *b* to *b* and a piece

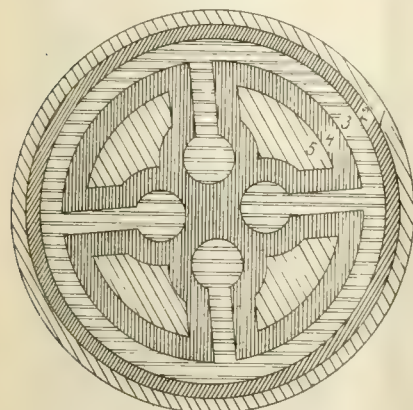


Fig. 2.

from *b'* to *b'*, these two pieces of twine should then cross each other at the center; from this, *a*, measure to each side one foot two inches and put pegs exactly in the lines, this gives the centers *c*, from these draw circles *f* with seven inches and *g* with one foot one inch radius; from the four points where the twine crosses circle *d* measure to each side three inches and where it crosses *e* to each side nine inches and put pegs in these sixteen points, tie

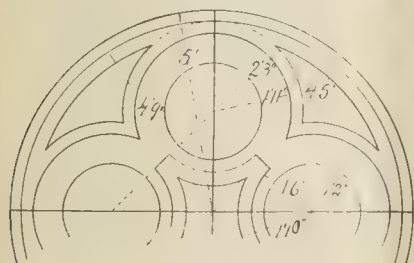


Fig. 3.

twine between the opposite and corresponding points as dotted lines indicate, and draw the parts of these straight lines that are drawn full on the plan. Now mark all the full lines and the bed is ready for planting. These directions as well as the following ones will best be understood if you get pegs, twine and tape line and try the construction step by step according to directions on a piece of level ground.

With a little practice it is not so difficult. The writer learned by self-study only, having no directions to go by, except a good knowledge of practical mathematics.

Such a bed as it is usually drawn would look like Fig. 2. 1, *Santolina incana*; 2, *Alternanthera amœna spectabilis*; 3, *A. aurea nana*; 4, *A. paronychioides major*; 5, *Santolina incana*.

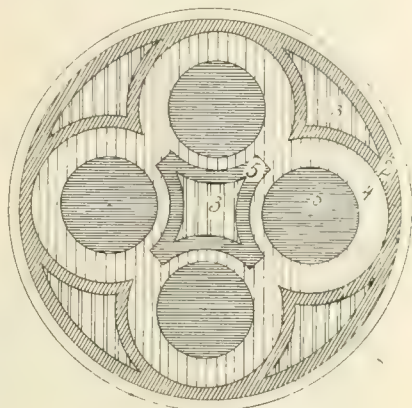


Fig. 4.

A working sketch such as you use for laying out a design would look something like Fig. 3.

While the corresponding design would look like Fig. 4. 1, *Echeveria rosea*; 2, *Alternanthera amœna spectabilis*; 3, *A. aurea nana*; 4, *Pilea nana*; 5, *Alternanthera spatulata*.

Other color combinations than these can of course be used; it depends largely on the stock on hand, and the effect can often be heightened by setting a plant as agave, yucca, *Dracæna indivisa* or some ornamental grass in the middle and smaller plants of the same kinds or

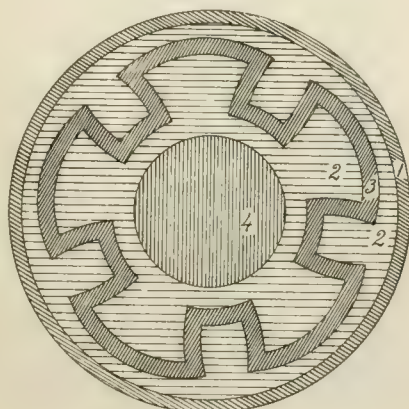


Fig. 5.

Echeveria metallica, etc. In other suitable places, and in many cases the middle of the bed can be raised, sloping evenly to the edge:

Fig. 5. 1, *Alternanthera paronychioides major*; 2, *Coleus Golden Bedder*; 3, *C. Hero*; 4, *C. Verschaffeltii*.

This is a bed of strongly contrasting colors for a twelve foot circle; it is easily laid out, the main difference from the former two being that the circle must be divided in five parts to find the centers. Symmetrical designs like these are easily laid out, as the corresponding centers always are equally far from the main center and equally far from each other. In the designs 2, 4 and 5 we have to divide the circles in four and five parts. In Fig. 6 we must divide in ten parts to find

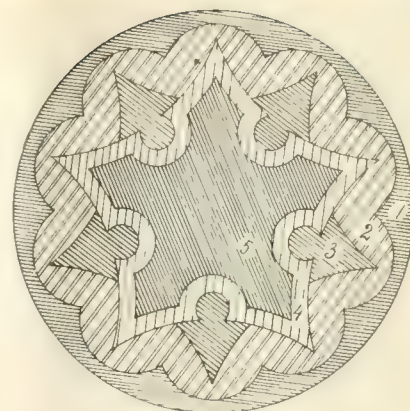


Fig. 6.—Ten feet diameter.

the centers, first dividing in five parts and then each of these in two. The radius divides the circle in exactly six parts, take every other point of these and it is divided in three. To divide in eight parts first divide in four and then each of these in two, to divide in nine parts first divide in three and then each of these in three, etc.

Fig. 6. 1, *Alternanthera amœna spectabilis*; 2, *A. aurea nana*; 3, *A. paronychioides major*; 4, *Santolina incana*; 5, *Achyranthes Lindeni*. H. HANSEN.

FLOWER SEED GROWING IN AMERICA.

American seed growing has developed wonderfully during the past twenty-five years, until now, in spite of the European advantage in experience and in cheap labor, we are producing vegetable seeds which compare favorably both in quality and price with any from abroad. But we have paid little attention to growing flower seeds, the great bulk of those used in this country being imported.

There is, however, an exception in the case of sweet peas, American grown seed of this flower being abundant and cheap, and generally considered the best in quality. The honor for the improvement of the sweet pea has been given to Henry Eckford, of England, and to such an extent that many seem to think that not only were all of our finer sorts originated by him, but that we must depend solely upon him for any further improvement.

I would not speak lightly of, or underestimate Mr. Eckford's work. He has done more to create and develop the modern improved forms of this beautiful flower than any other man; but, while giving him due credit, we ought not to ignore or undervalue the studies and labors of such men as Hutchins, Morse and other American lovers and growers of sweet peas. A collection made up wholly of Eckford's varieties would lack some of the very best kinds in cultivation. He has produced nothing so early and free flowering as the Extra Early Blanche Ferry, nothing of its color so beautiful as Stella Morse. America is the best red striped. Cupid, with all the splendid possibilities of its type promised in Pink Cupid, is an American not an Eckford variety. Blanche Burpee, his best white, is at least equaled by The Bride, and Brilliant is a better red than his Mars. Not only this, but it is a fact that in many cases, after American growers have worked for years to produce and perfect some stock, Eckford has sent out some new variety essentially like it, and, though the American stock was usually the purest and best fixed, and often better in other qualities, it has been unselfishly dropped, rather than add to the confusion of names, and Eckford alone has been given credit

for work which was as well done by the American.

So much for the past. As to the future I know that one American is now growing stock of a variety which is as distinct a departure in color as Cupid was in form, being a true blue, a color hitherto unknown in this flower. It is hinted that in the opening year of the twentieth century an American grower will enrich our gardens with an entirely distinct class of half dwarf or bush sweet peas, superior in both beauty and usefulness to either the tall or dwarf sorts.

It has been said that our American sorts are not the result of horticultural skill, but chance sports, the outcome of the large areas planted in this country and the consequent immense number of individual plants produced. But no one who has had an opportunity to know the careful study and earnest work of some of our American growers will deny that their work is well done and worthy of praise. While it perhaps does not illustrate this point, the history of two American sorts may be of interest. Some forty years ago a woman in Northern New York noticed and saved the seed of a particularly bright flowered plant of the old Painted Lady. She planted them in her garden and each succeeding year saved and planted seed of what she thought were the best plants. She did not raise many, some years not more than a dozen plants, and never more than could be grown in three square yards. She was the wife of a quarryman, and her garden was always over limestone ledges, where the soil, though fertile was very thin, often not over a foot in depth, and gradually her plants became more compact and sturdy, until after some ten or twelve years she ceased to "bush" them, simply letting them support themselves. After she had raised them in this way for some twenty-five years a seedsman noticed their beauty, obtained about 100 seeds and from them has come the Blanche Ferry. This poor woman was not a scientist, her little garden and cottage were not at all an ideal trial ground and seed laboratory—but no scientist has suggested a better plan for the development and fixing of the qualities which make the Blanche Ferry the most practically useful variety we have than that which her love for the beautiful and her conditions of life lead to her carrying out so faithfully and patiently. The Extra Early Blanche Ferry was not the result of the selections of the earliest flowers, but it was developed on the theory that the time (from the sowing of the seed) of a plant coming into flower was quite as largely affected by conditions of growth as by constitutional tendency, but that the period in the development of the plant when it first showed bloom was more a matter of constitutional tendency than of growth conditions. Accordingly in breeding for early flowering, plants which produced flowers from the lowest nodes, rather than those which first showed flower, were selected, and the results show the correctness of the theory. It seems to me that what Americans have done in the development of this flower suggests possibilities with others, and that we ought to look forward to the production of our own flower seeds of all kinds.

WILL W. TRACY.

THE WATER ARUM.

The water arum (*Peltandra Virginica*), highly deserves more attention as an ornamental plant, particularly for parks and large grounds. Naturally it flourishes

in rich alluvial soils, either on rather moist river borders or in shallow waters.

From the immense roots rises a dense mass of large shining, deep rich green, calla-like leaves, highly ornamental in appearance, rendering it a very beautiful plant. The flowers are not showy but very curious. The flower stems (like the leaf stems) rise directly from the root, each bearing a dense spadix of small flowers enclosed in a long, slender, very odd-looking greenspath, opening on one side, the white margins bordering this opening curiously toothed.

A large plant of this species becomes a mass two feet or more high, and two or three feet across, sure to be admired by all who see it. It starts rather late in the spring, flourishing all summer. Highly recommended as a bog plant or aquatic.

W. R.

venber to January, and is thus easy to be had in bloom around Christmas. The bulbs this year will be offered in greater quantity than heretofore.

RHEUM PALMATUM TANGUTICUM FLORE ROSEO.

A new variety of the true crown rhubarb, the flowers of which are rose-colored instead of yellow. The true crown rhubarb, once very much favored as the best sort, was cultivated in Europe in the beginning of this century, but without knowledge of its true value. Afterwards when the Canton rhubarb (*Rheum officinale*) appeared in commerce the *Rheum palmatum* disappeared. It was the well known Russian traveler Przewalski who detected again the true form of the crown or Kiachta rhubarb and brought home seeds of it. The late Director E. Regel of the Imperial Botanic



GALANTHUS CUCITICUS.

New and Rare Plants.

TWO NEW HARDY PLANTS. GALANTHUS CUCITICUS.

This new snowdrop was found by Mr. Siehe, of Mersina, in the Cilician Taurus, Southeast Asia Minor. It differs from all its allies by its enormous size; but for gardening purposes it has a still greater recommendation. While all the other snowdrops bloom after New Year's and cannot be or are with difficulty forced, this species flowers naturally from No-

Garden at St. Petersburg cultivated it and found it a new variety of *Rheum palmatum*, viz., var. *tanguticum*. He showed also that the cultivated root gives after some eight years' cultivation a drug which cannot be distinguished from the true crown rhubarb. Besides this the plant is most valuable as a decorative garden perennial. The leaves differ widely from those of other species of rheum. They are lobed, long petioled, the blade having a diameter of one foot. The color of the leaves is a purplish green. The leaf rosette has a diameter of about three feet. From the middle of this

appears the flower stalk, growing six to eight feet high, somewhat ramified, but the twigs straight and directed upward, so that the whole inflorescence has a very peculiar appearance. The old variety has yellow flowers, which appear in great quantities and furnish after some weeks dark blood-red fruits. But it is a curiosity of the plant that it yields good seeds only in a colder climate, or if propagated in warmer climates by seed, only during the first two or three years. Afterwards the seeds, though full grown are sterile. The new variety flore roseo has flowers of a very fine rose color.

U. DO DAMMER.

A NEW ASPARAGUS.

In addition to the well-known nanus, another form of *Asparagus plumosus* has now appeared, and is grown by Mr. T. Jannoch, at Dersingham, near King's Lynn. The new variety, called *cristatus*, has deep green branches, somewhat more densely clothed with verticillate clusters than the ordinary *A. plumosus*. The chief charm of the plant, however, consists in the main rachis being several times divided toward the tip, then producing a beautiful cresting after the style of the crested varieties of *Pteris serrulata cristata*, only, of course, much finer and more graceful in appearance. In addition to the crested peculiarity it may be added that the plant is not a climber, so that if grown in pots it should prove very attractive and a great acquisition.—*The Garden*.

The Greenhouse.

PRIMULA VULGARIS.

The genus to which the above belongs is rather prolific in species, from seventy to eighty being chronicled, a large number of them being very elegant and choice subjects for either the hardy herbaceous border or the rock-garden. They are also, as a rule very submissive to forcing, and therefore good subjects for the cool conservatory, the most popular being *Primula Sinensis* (Chinese primrose), *P. obconica*, *P. variabilis* (or polyanthus), *P. officinalis* (cowslip), *P. elatior* (oxlip), *P. auricula*, *P. cortusoides*, *P. Japonica*, and the one that heads this note, *P. vulgaris*, all of which are well adapted for



PRIMULA VULGARIS.



PRIMULA OBCONICA GRANDIFLORA.

rose, which must of course be treated as a greenhouse plant, *P. obconica* being also partial to greenhouse protection.

The chief distinctive feature that characterizes *vulgaris* from its immediate relatives *officinalis* and *elatior*, are that in the former the peduncle or primary flower stem common to the latter is suppressed. To compensate for this short-coming the pedicels or secondary flower stems are much longer than those of the bunch-flower polyanthus, enabling the flowers to appear well above the foliage of the plant.

Primula vulgaris seeds should be sown in early April in a cool greenhouse in order to get large-flowering plants by the middle of the following winter. Pricked off in boxes, or any other convenient receptacle in which they are to remain until well established; transferred to the open garden from the said receptacle in well-enriched soil, and in partial shade if procurable, they will make greater progress than if transferred to pots. They ought to be lifted and potted in the latter part of October, if intended for conservatory work, otherwise lifted and planted in cold frames for spring work. As they require but a few weeks to re-establish themselves in the pots, they are available for flowering any time thereafter, though the greater success is attained by deferring forcing until the near approach of spring, when their natural proclivities may be tickled by the florist with the assurance of success. They are gross feeders and require lots of water. K. F.

GROTONS.

Crotons are exceedingly useful as decorative plants, and it is to be regretted that they are not more generally used by our florists; their varied hues far surpass any of those autumnal effects which artists are so fond of painting. They are not only fine decorative plants for winter work, but in the summer season they are equally as effective for bedding out purposes.

There are so many varieties suitable for both purposes that it will perhaps suffice if I enumerate a few of the best. For indoor work I would recommend *Reedii*, *Dayspring*, *Madame Seilliere*, *Mortii*, *Johannis*, *Aneitumensis*, *Carrieri*, *Lord*

Belhaven, *Disraeli*, *Lady Zetland*, *Hanburyanus* and *Chrysophyllas*. For outdoor planting the following will be found reliable, *Baroness James De Rothschild*, *Dayspring*, *Interruptus*, *Aurea maculata*, *Fasciatus*, *Multicolor*, *Lady Zetland*, *Veitchii*, *Rubra variegata*, *Evansianus*, *Mooreana* and *Queen Victoria*.

They can be propagated from cuttings put in sand, or by ringing; the latter plan I prefer, as it enables much larger tops to be taken than could possibly be done from cuttings. They should, if rung in March, have made a growth of from two to four feet by the end of September. In order to grow them on successfully, it is necessary as soon as they have rooted through the moss, which usually takes about twenty days, to take every particle of moss carefully away, then either pot them while on the plants or cut them off and place them in a close propagating box until they have taken hold of the soil, when they should be transferred to quarters where they can have more air and light; it will then be necessary to keep them potted on as often as they may require it, in a compost consisting of good fibrous loam, sand and bone dust.

During the time between March and September, which is the season they make their growth, it is necessary to keep them in a moist atmosphere with a temperature of from 80° to 90° during the day and 70° to 75° at night. During the first three months of their growing season, only sufficient ventilation should be given to prevent them from making a weak growth and at no time should ventilation be given which will reduce the temperature below 75°. A house with a southern aspect is best adapted to them, which should be kept shaded until the end of September, when they may be gradually exposed to the sun.

The stock plants after the cuttings have been removed can be planted out in the nursery during the summer when they again will furnish another batch of cuttings by the fall. Another way of utilizing the stock plants is to cut them down to within three or four inches of the pots, then shake all the soil from them and reduce the roots so as to be able to get them into considerably smaller pots than they have been grown in, when if given similar treatment to that recommended for the young plants it will be found that satisfactory results will be obtained.

A syringing with a solution of tobacco extract, in the proportion of one 2-inch potful to two gallons of water once a week will be found an excellent preventive against mealy bug and scale, two pests which they seem to be particularly subject to.

With reference to outdoor planting I would suggest the advisability of plunging the pots, as it will be found that after having been taken up in the fall, the risk of losing their lower leaves will be reduced to a minimum. D. C.

Trees and Shrubs.

NOTES FROM EGANDALE.

Experience has taught me—and the fact has been strongly brought home to me this season—that in our soil and climate it is best to make flower beds a few inches higher than the surrounding turf, especially for low growing, and not over robust plants. Strong, vigorous plants, like most of the perennial asters and sun-flowers, or moisture-loving subjects, such

pot culture, and will do equally well in cold frames, excepting the Chinese prim-

as the more common forms of the iris, will do in lower beds; but *Pyrethrum roseum*, *Lychnis flos-cuculi*, *Papaver nudicaule*, or any low growing plants, do better where most perfect drainage exists, especially in winter. Where a bed is high, we can, by watering properly, control the moisture; but where it is low, the plants are at the mercy of the elements during a rainy season.

On examination of a horse chestnut "blister spot," so common on the trees around here, I found evidence of damage by worms; fine particles of sawdust were present. With a sharp gouge, all unsound wood was cut away and two white worms dislodged. A paste was made of finely powdered charcoal and pine tree oil, and all parts of the exposed inner wood thoroughly covered. This soon hardens and protects the injured parts from the elements, and will repel further attacks of the worms. In the course of time new wood and bark will cover this wound, and the tree be none the worse. The inner wood of a tree is practically dead and inert, and, so far as the future growth and development is concerned, is of no consequence, except as a post around which the active, living part grows and adheres for support. If the decay of the inner part is averted, and it is eventually covered by new bark, the tree lives on as if never wounded; but if the decay is not stopped, it will, in time, extend to all the old wood, with a hollow shell as the result.

Rosa spinosissima Altaica, sometimes described as *R. grandiflora*, is such a charming form of the single white, that for the two winters I have had it I deemed it best to protect it by simply placing an inverted box over it. Last summer it sent out several suckers some two feet away from the main plant, and this bunch was left exposed during the past winter; it came through uninjured, even to the tips. For simple rustic beauty this rose cannot be excelled. W. C. EGAN.

SHRUBS FOR SITE NEAR LARGE MAPLE.

Kindly tell me which of these shrubs will be the least injured by the proximity of a large maple tree. The garden plot, 100 feet long with southern exposure, has a hedge of *Berberis Thunbergii*. I wish now to plant a collection of tall growing shrubs as a screen. The following are the shrubs: *Forsythia Fortunei*, *F. viridissima*, *Hamamelis Virginica*, *Viburnum opulus*, *V. tomentosum*, *Diervilla alba*, *Syringa grandiflora*, *Rosa multiflora*, *Spiraea prunifolia*, *Ribes aureum*.

M. H. G.

All the varieties mentioned are well able to take care of themselves, and do fairly well under the circumstances stated, except *Rosa multiflora*. *Hamamelis Virginica*, *Ribes aureum*, *Spiraea prunifolia* and the forsythias will stand the drought better than the balance. The extra drain of food from the soil, on account of the numerous feeding roots that the maple will send out, can be overcome by a generous top dressing of well-rotted manure in the fall, raking off the coarser part in the spring and carefully forking in the balance. The main difficulty to overcome will be the lack of moisture during dry spells in summer, although watering once in a while will help matters. If a few *Rosa multiflora* are desired, make a bottomless box of two inch planks, three feet square and two feet deep. Set it in the ground so that the top is even with the surface of the surrounding soil. Plant a rose in the center, and use *Vinca minor*,

moneywort, or any creeping plant along the inneredge of the box in order to cover it from view. *Potentilla fruticosa*, *Caragana frutescens*, *Cotoneaster acutifolia*, and the Amur tamarix will do in the situation named.

W. C. E.

THE FLOWERING AGE OF ACTINIDIAS.

ED. GARDENING:—How old must the various actinidias be to bloom and fruit?

F. N. B.

Replying to yours enclosing inquiry concerning the flowering age of actinidias, we are unable to state definitely, but think that the plants produce flowers and fruit when five or six years old.

ELLWANGER & BARRY.

Rochester, N. Y.

HYDRANGEA VESTITA.

ED. GARDENING:—Referring to *Hydrangea vestita*, there is no trouble about making it grow near Chicago, and it does not need protection. When it comes to blooming, that is another story. If Mr. Egan can make it bloom to any extent, I shall be thankful for his recipe. However, I am inclined to think he will find this shrub a worthless nuisance. R.

PLANTING ABOUT THE HOME.

The following is an abstract of an address delivered before the Columbus, O., Horticultural Society, by Prof. W. A. Kellerman:

The first and essential thing is to have a good and well-kept lawn of bluegrass and white clover. No planting can take the place of this, and if the lawn is perfect no other planting is demanded in case the front yard is very small. Where the owner possesses a large lawn his taste need not be criticised if flowers, shrubbery and trees are entirely discarded. But the majority prefer to have some ornamental plants or shrubbery where the city lot is of good size or the country yard is of generous dimensions.

Usually the walk from the front door is and ought to be straight, leading directly to the sidewalk or road. If the distance is sufficient, or the point of intersection with the road or street is so situated that a gracefully curved walk can be laid out, so much the better.

The lawn should not be cluttered up or dotted over with shrubs or other plants. These will especially arrest the attention, and distract from the pleasing impression of the place as a whole. Rather let the



CROTON MADAME SEILLIERE.

plants flank the sides of the lawn, the latter remaining unmolested. Then a pleasing picture will be presented.

Above all avoid planting in a symmetrical and artificial manner. Do not put exactly the same number of plants on each side of the central walk. Or if you do this, do not make one the exact counterpart of the other side. Arrange the plants so as to appear natural. In no case plant shrubs or trees in straight rows. This is allowable only along avenues, or along sidewalks—never on lawns even at the borders.

When the house has an east or north front there will be no need or excuse for planting large trees, unless the front lawn is very large. On city lots it would be seldom allowable. But for a west or south front shade is demanded, and elms or other good trees should generally be used where space will permit.

The plants at the side of the house, when there is space for such, should in the majority of cases be mostly near the fence or border of the lot rather than against the house; if a walk passes beside the house, then the plants should be mostly between the walk and the lot line.

Vines on the porch or front of the house are not always preferred—the style of the architecture and the taste of the occupant may without further comment suggest what the practice should be. But neglect of the vines when used is wholly inexcusable. Unobtrusive supports should generally be provided, and the arrangement should be such that the vines could be laid down temporarily for winter protection, for painting the building, etc.

Where feasible a back lawn should be laid out, and equal care bestowed upon it as on the front lawn. But since more retired it may harbor more plants and flowers, and wilder or gayer natural conditions might here obtain. Yet useful (fruit-bearing) vines may also be used, especially when the back-yard is toward the south.

While there are many desirable annuals that should receive attention, perhaps the large majority of plants ought to be perennials—herbs, shrubs and trees. This is true for the front lawn at least. What to plant from the hosts of excellent native and exotic species, can be selected after some study of the several kinds and the advice of a practical naturalist or reliable nurseryman.

SOPHORA JAPONICA.

The *Sophora Japonica*, though one of the hardiest of Japanese trees and one which has been in cultivation for over 100 years, is rather scarce in cultivation. Young trees have been set out in many parks within the past few years, but as the tree is somewhat slow growing it will be some considerable time before they are as large as the one illustrated, which is growing in Fairmount Park, Philadelphia.

This tree is about 20 feet high, and is now of a flowering age. It is many years before the *sophora* blooms, but the tree itself is beautiful, and when it does flower it is such a desirable tree that one feels compensated for the delay. It is valuable for flowering late in summer, when but few trees are in bloom. The flowers are pea shaped, leguminous, as they are called, cream colored, and produced in immense panicles. These panicles are at the extremity of the branches, decorating the tree beautifully when the flowers are expanded. The leaves are pinnate, of a shining green, and the color of the young wood is always of a deep green. Pods follow the flowers, but as the flowers

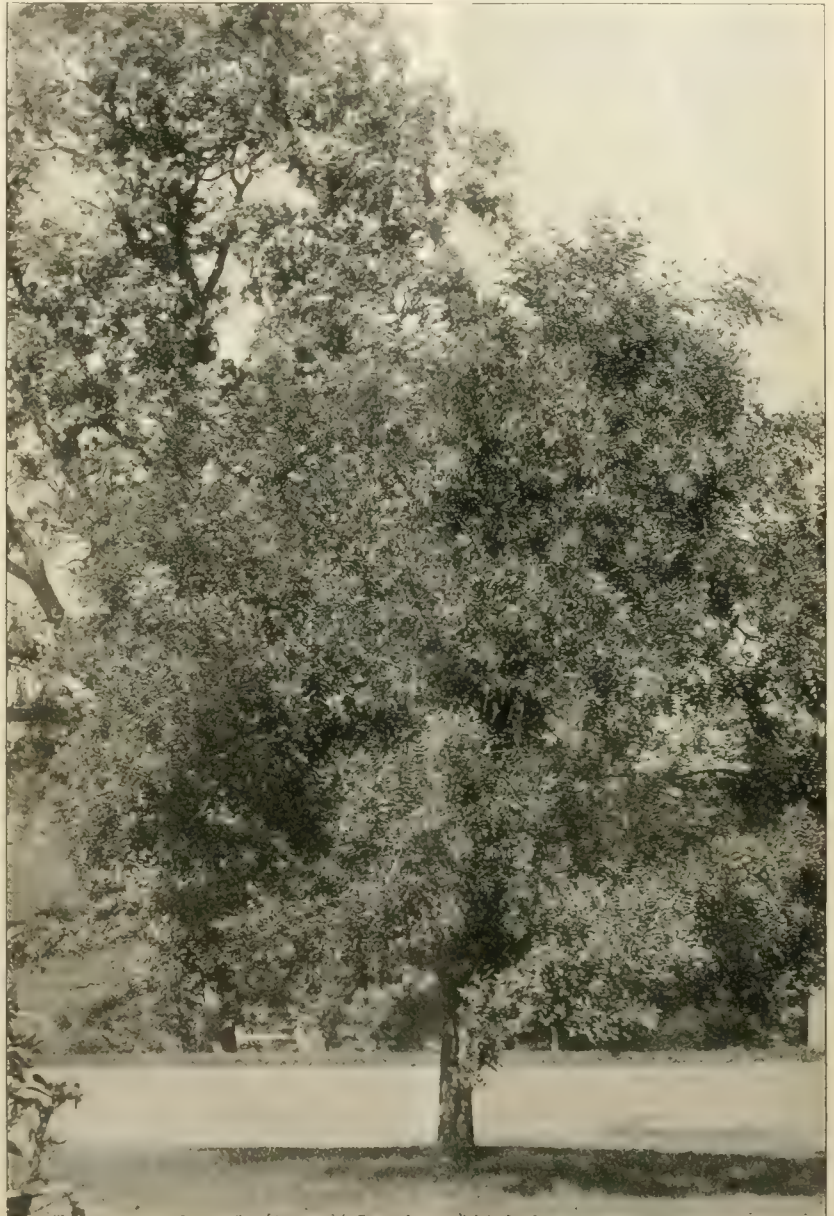
come so late in the season the seeds rarely ripen on these park trees.

Besides the tree illustrated, there are some very much larger in another portion of the grounds, known as George's Hill. These are 40 feet high, perhaps, and have as many feet of spread, and when in bloom, which occurs to a greater or a less extent every year, they are a great attraction.

There is a desirable variety of this tree, a weeping one, known as *Sophora Japonica pendula*. This is grafted on the common form, the cion being usually inserted on stems of about six feet in height. It is one of the weepers

opinion. Young grafted trees of this are liable to throw out shoots irregularly, which would lead to their lacking the symmetry of outline which is usually desired. A little pruning when the head starts to form will remedy this, and will ensure an evenly headed, well proportioned specimen. JOSEPH MEEHAN.

GRAND RAPIDS HORTICULTURAL SOCIETY, GRAND RAPIDS, MICH.—Mrs. Sarah Smith entertained the society at its monthly meeting on April 26. There was a large attendance and a fine display of roses and carnations was a feature of the day. Papers on timely topics were read by E.



SOPHORA JAPONICA.

which do not increase in height, but droop from where grafted, forming no leader. This grafting is done in April, about the time buds are bursting.

This weeping variety is beautiful at all seasons of the year, but, as with many other trees of a drooping character, it is at its best when the winter season displays it bereft of foliage, in my

E. Phillips, of Walker; Mr. Richardson, of Jamestown; Mr. Kelley, of Harrington; Hon. C. W. Garfield, H. O. Braman, Col. P. V. Fox, Wm. Roe, W. N. Cook, and Henry Smith. The hostess, Mrs. Smith, discussed the culture of begonias and discouraged out-of-door planting. The consensus of opinion was that Michigan will have a bountiful fruit crop.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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ARBOR DAY was a great success in Pueblo, Colo., this year, thanks to the industry of the local Park and Improvement Association. Over 2,000 trees were planted, mostly catalpas.

FIFTEEN thousand people assembled within the confines of Alamo Plaza, San Antonio, Tex., April 21, to witness the Battle of Flowers, and the occasion is said to have been one of the most memorable in the history of the city.

GROWERS of gooseberries are liable soon to be troubled with mildew, and it would be well for such persons to refer now to the note on this subject which appears on page 167 of our issue of February 15. Prevention is better than cure.

WE HAVE received from Mr. Robert Shore, of Ithaca, N. Y., photos of a specimen of *Phalenopsis Schilleriana* with a panicle carrying eighty-five expanded flowers. The plant was grown in the greenhouses of the botanical department of Cornell University.

THE PRINCIPAL of the Gorman school, St. Paul, Minn., recently received an assortment of garden seeds from the United States Department of Agriculture, through Congressman Stevens. The pupils have planted six large beds in the school yard, and already some of the seedlings have made their appearance above the soil. Great interest is being taken in the beds by the teachers and pupils.

DO NOT be in a hurry to set out plants taken from the greenhouse or hot-bed unless they have been well hardened off by being left uncovered a few nights. It takes some plants quite a while to recover from the effects of injudicious exposure.

WHEN PLANTING trees this spring take a measurement of the diameter or circumference at a point one foot above the ground, also the height, after the necessary cutting back, and record it, together with the date of planting. In after years you can look back and note development.

IF YOU SEE a Kilmarnock willow, weeping mulberry or any grafted tree in your neighbor's garden with suckers springing up from the root, or branches growing out from the stem below where it is grafted, call his attention to it, and tell him to cut them off, as they are stealing the vitality from the head. Advise him, also, to subscribe for GARDENING, which will keep him posted on all such matters.

PLANTS of *Rosa polyantha nana*, in 2-inch pots, are in bloom. The seeds were sown in the greenhouse March 1, and the first flower opened in just forty-nine days. The plants stand from two to three inches high, carrying single pink roses three-quarters of an inch in diameter. A rose bush in bloom small enough to wrap up and carry in one's vest pocket is quite interesting.

A COMMITTEE has been formed with a view to securing funds for the erection, at Brussels, Belgium, of a monument to Jean Linden, botanist and explorer. Comte de Kerchove is president; M. Kegeljan, treasurer; and M. Lubbers, secretary. Botanists and horticulturists throughout the world are invited to co-operate in the movement, and subscriptions should be addressed to M. Kegeljan, president of the Royal Horticultural Society of Namur, Belgium, in the form of postal orders, payable at Namur.

IN PLANTING rhododendrons or azaleas, especially imported stock that has had a long journey, soak the rootballs in a tub, letting them remain until all air bubbles cease to appear. Each air bubble represents a dry space where the water has entered. It is almost impossible to reach these dry spots near the center after the plants are in the ground. Moisture all through the roots is an essential element in their culture. When setting them in the ground, pound the soil around the ball as hard as you can, the object being to endeavor to have the soil around them as compact as the ball itself, otherwise when watering afterward, the harder ball will shed the water instead of absorbing it.

IT IS OFTEN necessary to retain the individual names in a bed of hardy phlox or the Japanese iris, so that if some special kinds please you or your friends, and you desire to obtain more, you know what variety to ask for. Wooden labels, set at each plant in a large bed, remind one too much of a cemetery. It is much better to obtain some soft copper sheeting, cut into squares—say one inch square—stamp numbers on them, or imprint the number with a stylus, and attach to pieces of telegraph wire stakes, eight inches long. Insert these stakes in the ground at the base of the plant, so that the copper square lies on the ground, or you can put an inch or so of soil over them. Enter the names in your "garden book" with their corresponding numbers and you have a record that is permanent and still unobtrusive.

THE NATIONAL FLOWER MOVEMENT.

The following is an abstract of an address delivered before the Massachusetts Horticultural Society recently by Frederick Leroy Sargent:

During the fortunate years of peace that have thus far blessed the second century of our national independence, we have seen developed throughout the United States a popular movement to bring about the adoption of a national flower. Here is a matter of pure sentiment seeking legislative recognition; a question of taste, if you will, leading to widespread organized efforts, to the formation of national societies, and to the calling of a national convention. The desire for a national flower—now so widely felt among the best people of our country—springs mainly from two sentiments, which are the love of our native flowers and the love of our native land. For us a fitting national flower would bring to the service of patriotism an emblem whereby our love for the fatherland would find expression through one of its fairest products. If our people ever come to enjoy the benefits of such an emblem, surely every true American must rejoice.

The first candidate to be publicly suggested was the mayflower or trailing arbutus. The principal reasons advanced are these: It was one of the first blossoms seen by the Pilgrims at Plymouth after landing from the Mayflower, and by Washington's army after their winter at Valley Forge. Its flowers suggest five-pointed stars, and its leaves are laurel-like. It grows wild in the thirteen original states, and displays an independence of spirit by defying cultivation. Unfortunately, its early blossoming in April and May makes it unavailable for decoration on any national holiday—that is to say, when we most wish to use the flowers. Moreover, not only is the plant unknown in the wild state over three-quarters of our territory, but to those of our fellow Americans who dwell in that vast region, it must remain unknown even in cultivation. It has been recognized for several generations as the floral emblem of Nova Scotia, which alone should make it unavailable for our use.

In many ways a more happy suggestion was that of the goldenrod. The fact that it grows wild in such profusion almost everywhere in the United States, and in such a brilliant adornment of the roadside, made it at once a popular candidate. Much enthusiasm was shown, and for a while it looked as though the goldenrod would carry the day. It is difficult to use for decorative purposes, physicians maintain its unhealthfulness, farmers either despise it as the "yaller weed," or hate it because of its dark record of injury to cattle, and therefore it has been discarded.

As the Columbian celebrations approached the desire for a national flower increased. Among other candidates were the pansy and the Indian corn. In comparison with the goldenrod the pansy has the decided advantages of variety of color and simplicity and distinctiveness of form, combined with entire harmlessness. On the other hand it is not a native flower, and is entirely without associations that would connect it with our country rather than any other. In the advocacy of Indian corn a hearty American feeling expressed itself. It is hard to recognize in a maize plant what we mean by a flower, and for purposes of decoration there might as well be no flower.

Certain persons who did not know or did not care whether their candidates were the chosen emblems of other nations

proposed that we should adopt the rose of England; the clover, whose leaf is recognized in the shamrock of Ireland; the chrysanthemum of Japan, or the lily, which has been so prominently associated with the history of France. Still others would accept a foreign flower, and would advocate the pink, the pampas plume and the cosmos. The lingering fondness for a weed, even though a foreign one, expressed itself in the proposal to choose the oxeye daisy. The poetic feeling that a floral emblem should somehow be good to eat found expression in the suggestions to glorify the peanut and the potato, while a somewhat similar sentiment urged the grateful recognition of the comfort-bringing King Cotton and Senor Tobacco. To many good people it has seemed that the whole matter depended upon personal fondness, it never occurring to them that fitness for national uses should be the first consideration. Perhaps the most extraordinary suggestion of the time was that we have, instead of a national flower, a bouquet or garland composed of state flowers. If by some wizard's spell such an incongruous medley could be collected, what could be done with it? None of the following aroused more than a fleeting interest: The pond lily, the larkspur, and our native asters and sunflowers. No little interest has been aroused by the suggestion to use some tree or shrub. The oak, the American elm, the magnolia, the tulip tree, the yucca and the mountain laurel were the principal woody plants brought forward. These, however, were soon discarded. Surely nothing could better show the invincible vitality of the popular desire for a national flower than its persistence.

The National Floral Emblem Society of America was organized at the time of the World's Fair. Its object is to "obtain a genuine expression of the will of the people" which shall lead to the adoption of a national floral emblem and a selection of state flowers, as far as these have not already been chosen. Entirely independent, although in friendly relations with the Floral Emblem Society, is the Columbine Association, which to-day holds a leading place in the national flower movement. It has a single aim, "to bring about the final adoption of the columbine as a national flower of the United States."

The desire to have the columbine as our national flower may be said to have had its origin at the Columbian Exposition. It is graceful in poise, under no circumstances becoming a noxious weed, wearing an air of prosperity as it swings its tiny bells from the crevices of bare rocks. It wears our national colors—red, white and blue—and grows in every section of our country. The name columbine is derived from the same Latin word as is the name of Columbus, the discoverer, and of Columbia, the name which our nation rightly bears. That there are just thirteen species of columbine indigenous in the United States is interesting as a coincidence in view of the thirteen stripes in our flag. The time of flowering for the whole country extends through the spring and early summer, making it available on our only national holiday—the Fourth of July. They are at their very best on Memorial Day, when we have most need of a national flower. From the point of view of decorative design, the columbine possesses great advantages from the fact that its national associations are expressed not only in the name, but in the form and colors assumed by the various parts.

We were much helped in our efforts to

reach those who did not clearly understand just what sort of a plant is desirable for a national flower, at the National Flower Convention held at Asheville, N. C., in 1896. This convention, called to recommend a national flower for adoption by Congress, was composed of delegates from various states of the Union, chosen by their respective governors at the request of Governor Carr of North Carolina.

The main result of this convention was an agreement as to the qualifications which should decide the fitness of a flower to be our national emblem. While the convention deemed it inexpedient to make any recommendation of a special flower at that time, it was evidently the sense of the majority of the delegates present, as shown by an informal vote, that the columbine or aquilegia (sometimes known as wild honeysuckle) is the only flower which meets the requirements set forth in the qualifications decided upon. It was announced in a recent Asheville paper that arrangements are being made for a second national flower congress, to be called by President McKinley at Washington, D. C.

To briefly summarize: Each of the columbine's rivals, though precluded by fatal objections, as we have seen, from serving as Columbia's emblem, nevertheless offered some most valuable qualifications. Thus, as the columbine connects itself by name historically with Columbus and the Columbian Exposition, so the mayflower by its name recalls the good ship of the Pilgrims. For their wide distribution, goldenrods, asters and sunflowers are remarkable as well as the columbine. The golden or the purple tints of these flowers, at their best, match the columbine's pure yellow and purple, while the latter's near relative, the larkspur, includes among its colors the columbine's red, white and blue. For inoffensiveness, charm and ease of cultivation the pansy and many of the old-fashioned garden flowers are endeared to us as much as the columbine, and for availability in decorative design it may be claimed that such flowers as the mountain laurel and the magnolia are, in form, hardly less exquisite and distinctive. The valuable suggestion which keeps in view our dependence upon the trees of the country would be expressed with scarcely less appropriateness by any one of them than by the columbine, their companion, which owes so much to their protecting care.

So in the matter of agricultural supremacy, corn, cotton and tobacco, as sample products raised on American soil, suggest the same abundance which is symbolized by the columbine's horn of plenty. The great merit of the columbine is that it combines within itself the highest merits of all these rivals. The advocates of other flowers are ceasing to contend with one another and are rallying to the cause, since in the triumph of this they see the realization of more than the highest promise of their former hope.

No one who has studied the growth of the popular desire for a national flower during the last ten years will permit himself to ask the question, Shall we have an emblem? The American people may be trusted to accomplish their heart's desire. The fundamental question for all of us to decide is this: Shall our national flower be a cause of regret or shame, or shall it be as fitting and noble an emblem as the world has ever seen? We are doing our best to bring the national flower movement to an issue of which our country may be proud.



REINHARD MAITRE.

WORKERS IN HORTICULTURE, VIII.

Reinhard Maitre, one of America's pioneer florists, died of heart disease at his home at New Orleans on April 14. His remains now rest in beautiful Metairie cemetery. Deceased was born in Baden Baden, Germany, in 1830, and located in the Crescent city forty-six years ago when he was a young man of 22. In 1855 he married Christine Rehm, who survives him. They had no children. Mr. Maitre spent his lifetime in floriculture, for he was a lover of nature's beautiful gifts to man. His artistic taste won him a national reputation as a horticulturist and landscape gardener. The finest grounds in New Orleans, both public and private, show the results of Mr. Maitre's fostering care. He was an unostentatious man, fond of his home, his books and his flowers, and in his death his city and the Society of American Florists lose one whose endeavors have done much to beautify and smoothen life's pathway.

Fruits and Vegetables.

RASPBERRIES, BLACKBERRIES AND DEWBERRIES.

The authorities of the New York Agricultural Experiment Station, Geneva, N. Y., give some interesting notes on the behavior of these fruits during 1897 in a recent bulletin, as follows:—

The soil of the station plats, while somewhat heavy, is better adapted for the culture of blackberries and raspberries than for strawberries; and plowing the ground between the rows to a depth of three inches early in the season of 1897 effectually loosened the soil and gave an impetus to growth, the effect of which was noticed throughout the season. Little winter injury was shown although the dewberries only were at all protected, and that merely by throwing a few shovelfuls of earth on the prostrate vines. Nearly all varieties set a full crop of fruit and rains late in the season brought the berries to maturity, so that excellent yields were obtained.

The black raspberries varied in yield from 466 ounces for a 25-foot row with

Poscharsky No. 15 to 186 ounces with Poscharsky No. 9, averaging 341.5 ounces. Poscharsky No. 15, Poscharsky No. 3, Palmer and Hopkins gave an average of 117 ounces of fruit before July 17 while Babcock No. 5, Mills, Babcock No. 3, Pioneer and Palmer gave averages of 117 ounces of fruit after July 23 and 369 ounces of total yield.

Poscharsky No. 15 is remarkable in giving the largest total yield as well as largest early yield; Palmer has a very long season, being classed with both early and late varieties; and Babcock No. 5 and Mills can safely be recommended for trial as late berries.

The best red raspberries gave somewhat better yield than did the best blacks, the averages for the first five varieties of each class being 482 and 471 ounces respectively; but the averages for all the varieties tested were 341.5 ounces for the blacks and 301.5 for the reds. Of the red raspberries, the best yielder was Loudon, 503 ounces, followed by Cuthbert, King, Kenyon and I. X. L.; while the early varieties were Pomona, Cline, Superlative, Pride and Harris; and late varieties, Kenyon, Talbot, Olathe, Miller Woodland and Brandywine.

The purple raspberries tested were only seven in number. The yields average slightly above those of the black varieties, ranging from 481 to 123 ounces. Smith Purple was most productive. This berry has all the characteristics of the black raspberries except that its color is purple. Shaffer and Columbian were most satisfactory in yield and quality, but Shaffer suffered considerable winter injury. Telebaugh is a new variety and has not yet been sufficiently tested as to its merits. It has a tart, large, dark purple berry with an abundance of bloom which gives a moldy appearance.

The blackberries gave heavier yields than any other species of rubus, and also lighter yields, the amounts ranging from 755 ounces to 71 ounces for a 25-foot row, the average being 376 ounces. The season lasted from July 15, first picking of Early Harvest, to September 7, at which date several varieties still bore fruit.

Dorchester, Success, New Rochelle, Stone Hardy, Early Mammoth and Agawam were most productive and include the best of both early and late varieties. Dorchester and New Rochelle have not always been hardy at the Station, but none of the blackberries suffered injury during the winter of 1896-7.

Lucretia is the only satisfactory dew-berry, and that yielded only 198 ounces for a 20-foot row, the yields of Bartel, Austin Improved and Mammoth running down to 38 ounces.

STRAWBERRIES IN KENTUCKY.

The conclusions drawn from some strawberry investigations conducted by the Agricultural Experiment Station of the State College of Kentucky during 1897 are summed up in a recent bulletin, thus:—

The soil for strawberries should be rich and moist, but well drained. Somewhat elevated lands preferable to avoid the late frosts. The soil should be thoroughly and deeply pulverized before setting plants. Barnyard manure the most generally used source of plant food. Bone dust and wood ashes found particularly valuable by many growers. The matted row system of growing the crop almost universally used in Kentucky. Continuous and frequent cultivation should be given the crop, whether weedy or not, from the

time of setting until late fall. Most Kentucky growers find it profitable to fruit their beds for two or three years. The average yield in Kentucky is 3,400 quarts per acre. The favorite market varieties in their order are: Bubach, Haverland, Gandy, Crescent, Michel and Warfield. The favorite varieties for home use now vary slightly from the market list.

THE ST. JOSEPH STRAWBERRY.

ED. GARDENING:—I notice in your issue of January 1st, a cut of Vilmorin's perpetual strawberry St. Joseph. The writer says, "It is a fair improvement upon Louis Gauthier."

Now as a matter of fact, it is no more to be compared to the Gauthier than a Shetland pony is to a draft horse. I grow them, and consider the Louis Gauthier vastly superior. The great house of Vilmorin-Andrieux & Co. made a blunder in not getting the Gauthier in 1895, for their rivals, Letellier & Son, of Caen, have made a great hit with it.

Last spring Vilmorin-Andrieux & Co. wrote me about their St. Joseph and complained that Letellier & Son had sent out the Gauthier as a remontant or perpetual. In this I think the former were right, as the Gauthier is only a twice bearer, by means of its offsets or runners.

Vilmorin-Andrieux & Co. did not catalogue the Gauthier in 1896 or 1897, but evidently repent, for in their 1898 catalogue just received they list it with thirty-two other large sorts, and make it their banner berry as to price, it being double that of any of the rest. In fact his quotation (\$7.00 per 100 and 90c. per 10 plants) is ten per cent higher than is asked for plants of Gauthier in this country.

The St. Joseph is smaller than Beder Wood. Except during hot, dry weather, which is quite a time with us, it is a persistent bearer of well flavored, well shaped berries. The Gauthier is three times as large, exquisitely flavored, unique and attractive in color, with a solid, juicy aromatic flesh. It is also very prolific in fruit crowns and runners.

A. T. GOLDSBOROUGH.

Washington, D. C.

A WORD FOR THE SHARPLESS STRAWBERRY.

I do not like to see old friends neglected. In Prof. Troop's strawberry notes as abstracted by you in the last number of GARDENING, there is no mention of Sharpless. I have grown well over half the varieties recommended in the list. They will nearly all exceed Sharpless in some one or two respects but taking all the good qualities of each, summing up and striking an average Sharpless will come out well in the lead as an all around good berry for home use in this locality. Warfield we think is hardly fit to eat although very productive.

A. W. B.

Cook Co., Ill.

THE RADISH MAGGOT.

ED. GARDENING:—Every season after the first two sowings my radishes are ruined by a small maggot which bores through the roots in a hit or miss sort of way, although they never miss spoiling the radishes. Along toward fall the pest disappears. Can you suggest a remedy?

A. A.

[No practical remedy has yet been found for the suppression of this pest, which also attacks the roots of cauliflowers and cabbages. Entomologists have recommended carbolic acid emulsion and car-

bon bisulphide, but the application of these is in line with catching the creature and killing him. Trenching the ground in autumn, leaving it exposed in a rough state to the action of the winter's frost, has been advised.—Ed.]

THE CURRANT BORER.

ED. GARDENING:—Is there any remedy for the currant cane borer. Every cane on my currants without exception is affected each season. They bore lengthwise of the cane. Some of the canes are not, apparently, seriously hurt while many of them bend over and lie on the ground. The effects are not so bad in the Dutch currants as in the Fay, although the former is equally attacked.

L. MURPHY.

[Remove and destroy the affected portions of the canes in spring or autumn.—Ed.]

Miscellaneous.

EXOTIC MAGNOLIAS IN ILLINOIS.

ED. GARDENING: Growing exotic magnolias in this section has been but little tried, and the few experiments have generally resulted in failure. Four years ago this spring a gentleman of this place planted a small specimen of *Magnolia speciosa*, obtained from Messrs. Ellwanger & Berry, of Rochester, N. Y. During the intervening winters it has had no protection except some manure at the roots. It has bloomed each spring. I examined it on the 23rd of last month; and found it a little over four feet high, very symmetrical and thrifty looking. It is full of buds, some of which are showing color. It belongs to the Chinese section, and is evidently one of the hardiest of the family.

W. C. EGAN.

Highland Park, Ill.

MORE ABOUT COWSLIPS.

Many additional replies to the queries concerning cowslips have come to hand since the publication of our last issue, and again we publish a few, regretting our inability to find space for more than a very small proportion of them.

GARDENING for April 1 contained an inquiry by one "Querist" as to whether *Caltha palustris* or marsh marigold is not known in England as "cowslips," and also if it is not sometimes used as a pot herb.

Of course, Michigan is not England, but with us the *caltha* is better known as "cowslips"—sometimes, I regret to say, even further degenerated into "cow-slops"—than by its far more appropriate and suggestive common name, marsh marigold.

By some of the early settlers the tender stalks and young leaves of *C. palustris* were used for "greens," serving the same purpose for which dandelion and dock were sought in the spring, the method of cooking being the same. I have a quite vivid recollection of hearing my grandmother, a New Englander by birth, express a wish for "a mess of cow-slip greens" and taking it upon myself to gratify her desire. My intentions, like "Miss Miggs," were virtuous, but not fortified by knowledge. I returned with wet feet and a big basket of cowslip blossoms, which I presented with great self-satisfaction. The flowers went into the

vases instead of the kettle, and the good lady was considerate enough not to laugh at me.

The caltha is one of the most conspicuous and abundant of our early flowers; there are few sights more charming in spring's first days than a marsh yellow with its golden bloom, which seems to have caught the April sunshine and crystallized it. But it and all our native wild flowers are growing rarer as the tile drain and the plow reclaim more and more of our wild lands. Sometimes it seems a pity.

ELIZABETH JOHNSTONE.

In GARDENING, of April 1, I see a query regarding *Caltha palustris*, the marsh marigold. It is not called "cowslip" in England and bears not the slightest resemblance to the cowslip of that country (*Primula veris*). Another species (*P. eliator*) is called oxlip.

Yes, *Caltha palustris* is used as a pot herb very extensively here in Michigan, the leaves being gathered in April or early May before they become too tough. Like all *Ranunculaceæ* they contain a considerable percentage of certain poisonous principles, and have to be parboiled, the first water used in boiling being poured off and replaced by fresh water, after which they are again boiled until well cooked. As a pot herb this plant is much prized by many.

As an ornamental plant *Caltha palustris* comes far short of being prized as it should be. Many varieties are met with. Indeed, it is difficult to find two plants with flowers just alike, even of exactly the same shade of yellow. Some have large flowers, others have small ones, and often we find them with double and semi-double blossoms. Few plants are more ornamental than a large *C. palustris* in full bloom.

Such a plant resembles a huge bouquet. From the large root arise numerous thick branching stems, for a few inches ascending together and then gradually spreading widely, densely covered above with a mass of brilliant golden flowers, surrounded below with a girdle of large, round, rich green leaves. Plants are often met with that measure two or three feet across and one foot high. The flowers vary in shade from light to deep yellow, and in size from one-half to two inches or more.

This plant flourishes in low rich soils, which are very wet during the winter, and until May or June, becoming very dry during the hot summer months. After the seeds are ripened every vestige of the plant decays to the root; but for a number of weeks it is, indeed, a thing of beauty, and that, too, at a season when flowers are comparatively scarce.

It is well adapted for planting in parks and large grounds, especially for bordering ornamental waters; and because of its habit of early decay it would be best to plant it mixed with other ornamental plants which develop later and are at their best during the balance of the season, otherwise, after the caltha dies down the ground would be left bare.

W. A. BROTHERTON.

ED. GARDENING:—In your issue of April 1 appears an inquiry as to whether the marsh marigold (*Caltha palustris*) is commonly known in England as "cowslips," and also whether the plant is used as a pot herb. In your invitation for information from correspondents you hint lack of knowledge of the term "cowslips" as applied to this plant.

I may say that I have known the marsh marigold as "cowslips" from boyhood, spent in northern Illinois, and to test my own recollection, a year or two since, I submitted specimens of the flower to some Chicago school children (suburban school children, of course,) and in reply to my queries the name was given "cowslips" and "marsh marigold," both titles being familiar.

That the name is *not* applied to this plant in England, however, is, I think, well known, the "cowslips" in England being the common name for a primrose, also a yellow spring flower (*Primula veris*.) I have looked up several authorities and find the results to point very strongly to the probability that the early English settlers in this country, missing their familiar "cowslips," transferred the name to a plant somewhat similar in popular characteristics just as, failing to find a "robin red-breast," they transferred that name to our American bird.

As a result of this inaccurate transfer of names we have also the "American cowslip" (*Dodecatheon Meadia*) and the "Virginian cowslip" or "bluebells" (*Mertensia Virginica*). I judge, however, that the name is likely to prove persistent for the marsh marigold. In Gray's Manual, edition 1868, it is said of *Caltha palustris*: "This well-known plant is used as a pot herb in spring when coming into flower, under the name of cowslips; but the cowslip is a totally different plant, namely a species of primrose. The caltha should bear with us, as in England, the popular name of marsh marigold."

But even the highest botanical authorities are not always able to contend against popular misnomers and I find in the revised edition of Gray's Manual by Watson and Coulter, 1889, the advice a little modified, as follows: "*Caltha palustris*—marsh marigold, often incorrectly called cowslips; used as a pot herb in spring when coming into flower."

Messrs. Higley and Raddin, in their "Flora of Cook County," 1891, simply say: "*Caltha palustris*—marsh marigold, cowslip, gools," a scientific surrender to popular usage. Webster's "International Dictionary" has the following definitions: "Cowslip—1. A common flower in England, *Primula veris*, having yellow blossoms and appearing early in the spring, etc. 2. In the United States, the marsh marigold, *Caltha palustris*; is often used as a pot herb. It is nearer to a buttercup than to a true cowslip."

With further reference to the use of the names in England I find in Cassell's "Popular Gardening," an English work, that "The common cowslip, *Primula veris*, is common in England, rare in Scotland. Cowslip is the name the flower has borne from the earliest Anglo Saxon times and probably refers to the sweetness of its perfume."

There is no reference to the name being applied or misapplied to *Caltha palustris*, which is also an European plant. Cassell's "Popular Gardening" further remarks of *Dodecatheon integrifolium* (entire leaved cowslip) that it is "a real gem from the Rocky mountains," and gives *Primula Sikkimensis* the sub-title "Sikkim cowslip."

As the English cowslip, the French cowslip, the dodecatheons and the Sikkim cowslip are all members of the primrose family, *Primulaceæ*, it may be after that the term American cowslip was given to our "shooting star" by our English cousins as they have given other popular names to our wild flowers when cultivated in English gardens. This the more

likely, as there is no popular resemblance between the primrose and the shooting star.

The derivation of the word as given in Webster is vastly different from the poetic notion in Cassell's. All depends on where the hyphen belongs. Is it cow-slips or cows lips?

R. W. VASEY.

MOUSE-EAR CHICKWEED ON LAWN.

ED. GARDENING:—Can any of your readers give me any information regarding this miserable weed. My lawns are overrun with it, also all the lawns in my neighborhood. The lawns were most carefully made, and have good depth of loam, with coarse gravel subsoil, which insures good drainage. I used plenty of rich horse and cow manure in making it, and top-dress with same every fall. The grass kept its color throughout the driest seasons. Within the last three years the chickweed began to appear, and now it has increased to such an extent that there is very little grass left. I have tried grubbing it out, but it seems to like this treatment, and keeps increasing. One of my neighbors had his lawn dug up and completely made over, but the chickweed has again appeared worse than ever. I keep the lawn cut short trying to prevent the weed from going to seed, and have used, of late, only commercial fertilizers, as I expect the seed of the chickweed came in the manure first used.

This subject is one that I find a good many are interested in, and if a remedy can be found, it would be a great boon to all those who have lawns.

SUBSCRIBER.

Publications.

BOOKS AND BULLETINS.

PROCEEDINGS OF THE AMERICAN CARNATION SOCIETY.—A. T. De La Mare Printing and Publishing Co., New York, 1898.—This covers the entire work of the American Carnation Society, at its seventh annual meeting, held in Chicago, February 17 and 18. As the more important papers, etc., were reproduced in our issue of March 1, it is not necessary to allude to them further here.

PROCEEDINGS OF THE WESTERN NEW YORK HORTICULTURAL SOCIETY.—*Democrat-Chronicle*, Rochester, N. Y.—The forty-third annual meeting of this society was held in Rochester, N. Y., January 26 and 27, and the volume before us gives a full account of the convention, with numerous valuable essays and discussions. This venerable society has rendered substantial aid to the various departments of horticulture throughout its career, and it is to be congratulated upon the high measure of success which has attended its well prolonged efforts.

REPORT ON THE MISSOURI BOTANICAL GARDEN.—Board of Trustees, St. Louis, Mo., 1898.—Another sumptuous volume comes to us from the Missouri Botanical Garden, in the form of the ninth annual report. Last year's work in the various departments of the garden is carefully reviewed, and the book contains a large number of instructive illustrations. A number of papers by experts, however, constitute its most important feature from a botanical standpoint. These embrace "A Revision of the American Lemnaceæ occurring north of Mexico," by C.

H. Thompson; "Notes on *Salix longipes*," by Dr. N. M. Glatfelter; "A Revision of the Genus *Capsicum*," by H. C. Irish; and others, with numerous records of observations made by Prof. Trelease and his associates.

THE PRUNING BOOK.—By Prof. L. H. Bailey.—The Macmillan Company, New York.—Through the courtesy of Messrs. A. C. McClurg & Co., of this city, we have received a copy of the "Pruning Book," a volume of Macmillan's garden-craft series, and Prof. Bailey's latest contribution to horticultural literature. Like all the versatile professor's books, it is lucid, comprehensive and entertaining. Too many still prune without a definite idea as to why they do so, and the nurseryman, soil and climate are blamed where a better knowledge of the principles of this operation would have made things more pleasant and profitable all around. While a good deal must always depend upon experience and intelligence, this book will go a long way toward removing many of the common misapprehensions with regard to pruning, and this accomplished, it will have rendered the gardening community a substantial service. We can therefore strongly recommend the work as one which will tend to diminish the failures of those who grow trees and shrubs for pleasure or profit.

GREENHOUSE MANAGEMENT.—By Prof. L. R. Taft.—Orange Judd Company, New York, 1898.—There is a vast fund of information in the 382 pages of this new book by Prof. Taft. The author needs no introduction as a writer on horticulture and floriculture. His former work on "Greenhouse Construction" has given him a clear title to the earnest attention of all who are interested in the cultivation of plants under glass, and his numerous contributions to horticultural journalism along the same lines have won him the entire confidence of all thoroughly practical men. The present work, though perfectly complete in itself, is designed somewhat as a supplement to the earlier book, and treats very fully of all the plants and crops usually grown in greenhouses. The various classes of ornamental plants and flowers are given much space, and they are dealt with in a masterly manner from the commercial as well as the amateur point of view. The book is particularly rich in just those facts which one is likely to find useful when engaged in the actual work of plant growing. Chapters are also devoted to the forcing of fruits and vegetables; mushrooms, asparagus and rhubarb; radishes, carrots, beets and beans; the management of house plants; bedding plants; propagation; insects and diseases; fuel, etc. The book, in short, covers practically everything which may at any time call for consideration in the rapidly increasing number of gardens indoors.

Societies.

STATE HORTICULTURAL SOCIETY OF TEXAS.—E. L. Huffman, secretary, of Waco, Texas, invites suggestions from those interested in the location and program for the approaching annual meeting of the association.

OMRO HORTICULTURAL SOCIETY, OMRO, WIS.—Members of this society will place their orders for nursery stock as a club. The next meeting will be with John Reynolds, on May 13. A chrysanthemum show will be given in the fall. Mrs. Jos. Treleven is the secretary.

WORCESTER COUNTY HORTICULTURAL SOCIETY, WORCESTER, MASS.—There was a very large exhibit of vegetables and cut flowers in connection with the society's second meeting, held on April 22. Sixty-two premiums were awarded, Elsie A. Weeks winning the largest prize, \$4, with a display of twelve hyacinths.

RHODE ISLAND HORTICULTURAL SOCIETY, PROVIDENCE, R. I.—"The Strawberry" was the subject discussed at the meeting held on April 20. Vice-president Varnum, Superintendent Fitz, of Roger Williams Park, Thomas Hope, C. W. Smith, Daniel Cooks and E. H. Burlingame spoke of its culture and commercial value.

CENTRAL NEW YORK HORTICULTURAL SOCIETY, SYRACUSE, N. Y.—E. A. Powell, an authority on the subject, addressed the association, on April 22, on the topic, "Plant Life in the Garden and the Home—Beautifying our Streets and Parks." He attributed to the tree planting of E. W. Leavenworth and W. Brown Smith much of the beauty which has gained for Syracuse the designation, "City of Homes."

FLORIDA HORTICULTURAL SOCIETY.—The annual meeting of this society for 1898 will be held at Orlando, May 3, 4, 5 and 6, and it promises to be one of the largest in the history of the society. In addition to the regular programme, arrangements are being made (by the request of members) to have papers presented on tobacco growing in Florida in its various phases. As this is a subject of paramount importance at the present time, all those experimenting in tobacco growing should be present. To all members, old and new, whose membership fee for 1898 is received in time, credentials will be issued, making available the low rates of transportation.

CATALOGUES RECEIVED.

Robert Craig & Son, Philadelphia, Pa., plants; Geo. Hancock & Son, Grand Haven, Mich., rooted cuttings; James Galen, Bethesda, Pa., plants, shrubs and seeds; Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y., heaters; H. Cannell & Sons, Kent, England, plants; Harens Brothers, Somergem, near Ghent, Belgium, plants.

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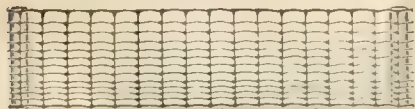
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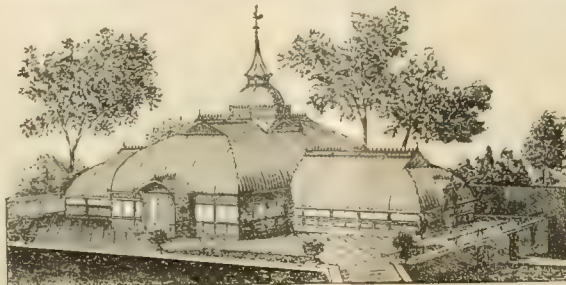
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GARDENING

Vol. VI.

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CHICAGO, MAY 15, 1898.

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No. 137



LAWN VIEW OF HOTEL DEL MONTE, MONTEREY, CALIFORNIA.

Trees and Shrubs.

CALIFORNIA SCENES.

We present herewith two views of the Hotel del Monte, Monterey, Cal., and grounds, which is without doubt one of the best laid out places in that part of the country. The ivy covered oaks in the foreground of the picture on this page are *Quercus agrifolia*. The illustration on page 259 shows the building and grounds as seen from the lake. The tall trees are the Monterey pine, *Prunus insignis*. Here we have a typical illustration of the incongruities of California gardening, for the series of steps rising up in the center of the fine terrace are neither granite nor marble, but ordinary wooden planks, very ragged and foot-worn.

NOTES FROM EGANDALE.

All trees and shrubs native and exotic, seem to be blooming with unusual freedom this spring. Young maples, varieties

of the Norway, six to eight feet high, planted a year ago, are full of flowers. The Japan weeping cherries whose flower buds were killed during the winter of '96-'97 are not only flowering most profusely upon the old wood, which is its habit, but has occasional bunches of flowers on last season's growth, an exceptional occurrence.

Finding that the rabbits were eating the blooms of the pansies and early creeping phloxes, I powdered the plants with Paris green and left it on a few days. The rabbits evidently did not relish the sauce provided for their evening meal and have changed their boarding house, for the plants are not disturbed now.

All the climbing roses came out unusually well this spring save the Empress of China, which seems to dislike my method of winter protection. I would like to hear from some reader of GARDENING who has wintered this rose successfully in a somewhat similar climate, either with or without protection, as to the method employed. I used to have trouble with the Ayrshire roses killing back when heavily protected with straw. I then tried an

open covering, like that provided by throwing sweet pea vines over them, which worked splendidly.

The daffodils are now on the wane, but have afforded plenty of flowers for the house since the middle of April. Princess is one of the earliest and strongest growers with me, while Maximum seems to be the weakest, producing but few blooms. The varieties Emperor, Horsfieldii and Von Sion do well. As is well known, the foliage of the daffodils, die down in midsummer, therefore some judgment should be exercised as to the situation allotted them. Mine are in the vegetable garden near the cutting grounds where the blank space left by the disappearing foliage is not prominent, as a row of dwarf pompon chrysanthemums are planted close up to them and soon cover the vacant space.

Where it is necessary to plant them in more prominent places, and not in rows they may be planted in small groups, each group about a foot apart, and strong growing annuals put between them, especially those of a spreading nature, or some perennial.

Narcissus poeticus is a much later bloomer and presents a grand sight when planted in masses, but the same question of the brown foliage and bare ground in summer presents itself. Knowing that the handsome little annual *Nemophila insignis* will grow in partial shade (its generic name means grove-loving) I will try the experiment this season of sowing it thickly among the narcissi, some time about the middle of May. Whether successful or not, it will pay to try the experiment.

Speaking of experimenting reminds me that last fall, at my request, Mr. Joseph Meehan selected in the nursery at Germantown, Penn., some hard and soft maples showing unusually bright leaf coloration. It is well known that some maples in a collection, in the woods or in a nursery row, will color well in the fall, while others of the same species alongside do not. The same soil and climatic conditions are enjoyed by each, still they differ individually. I know of one hard maple near here that colors beautifully on one side each fall long before its comrades. So far as I can see there is no evidence of disease, either on the side that colors first or in any part of the tree. If the tendency to color well in the fall is inherent in the tree itself then those selected by Mr. Meehan should color well with me. If they do, and further like experiments prove satisfactory, then a new element is introduced into the nursery business; trees of good coloring habits bringing extra prices. Perhaps the nurseryman of the future, following the Darwinian theory of selection may be able to advertise, "Maples of any desired fall color furnished; lawn party dresses matched and satisfaction warranted." W. C. E.

THE WEEPING BEECH.

The tree (*Fagus sylvatica pendula*) shown in our illustration grows upon the grounds that at an earlier date formed part of one of the famous nurseries of Flushing, N. Y. It is 48 feet high, the trunk measuring 10 feet in girth at three feet from the ground. The branches touch the ground on every side, and form a circle which has an average diameter of about 52 feet. Between the branches and the trunk is a highly arched tent-like enclosure, within which fifty people might easily stand. The tree is about forty years old, and is the largest and most perfect specimen in this country, and probably in the world.

SOME HALF HARDY SHRUBS.

I use the heading "Half Hardy Shrubs" because many that I intend to refer to are commonly so termed. Some of them are quite hardy here without any protection whatever. I am led to write on this topic to-night by looking on a specimen of the sweet bay, *Laurus nobilis*, which has stood out all winter, entirely unprotected, in as bleak a place as could be found, and which is to-day entirely uninjured in its wood, though the most of its foliage is destroyed. Had this plant been in a place where it would have been sheltered from the sun in winter, and from high winds, I am sure it would have kept its foliage perfect throughout. Such a place will be given it next year. I have been interested in watching the behavior of this plant because as I am told, it has stood uninjured in England when the common laurel has not, and this, the common laurel, flourishes splendidly at Washington. I saw groups of it there

last summer, the plants fully fifteen feet high. I have seen this live out in Philadelphia in sheltered places, and have no doubt it would do well when once established.

It is common to hear persons say that they do not care to bother with plants that need certain positions selected for them. In this case many native trees and shrubs would be excluded. The beautiful hemlock spruce much prefers to be free from cutting winds; the rhododendron demands the same and a preparation of the soil besides, and numerous other subjects could be cited. For my part, I think the one who has ample room and choice of situation has but little love for trees and shrubs if he does not care to take time to give them what they desire.

A few days ago I saw a large lot of the evergreen bamboo, *Bambusa Metake*, the sight of which was a good object lesson. It had been planted close to a large building. The wind which struck the building had been carried to the ground and had swept among the plants, destroying the foliage badly. The nearer the plants to the building the worse their appearance. Those some ten feet away were carrying their leaves almost as green as in summer. A native shrub would have suffered there as badly as this Japanese bamboo.

I have so often mentioned the hardiness of *Magnolia grandiflora* about Philadelphia, that it need hardly be said that in the mild winter just passed through

the several specimens hereabouts have not suffered at all or but very little. Just a little browning of the leaves, that is all. Were it not for the desire to protect the leaves, for the sake of their green appearance in spring, this noble evergreen would need nothing more than a mulching about its base for a winter or two after planting, until it had good root hold.

I do not know why it is that English holly is reported tender. The plants in this vicinity have never been hurt in the past six years, and there are large plants of it here and there, which must have been planted twenty-five years ago, and which do not appear to have ever been hurt.

Osmanthus aquifolia, *Ilex crenata*, *Skimmia Japonica* and *Castanopsis chrysophylla* are in the best possible condition. Has any one ever tried the *Olea fragrans* outside? It is my intention to do so, as I think its chances are very good. Some few years ago some florist left a number of large plants of *Azalea indica alba* out all winter and found it to be quite hardy. Now there are many fine bushes of it planted out permanently in this locality.

What these half hardy plants want is a locality suited to them, as already described. Then, on the approach of cold weather, place enough mulching about them to secure the roots from frost. I think this of great importance. Next to this set some evergreen branches about them at the same time, to break the wind and obscure the light. Do this for two



THE WEEPING BEECH.



VIEW FROM THE LAKE AT HOTEL DEL MONTE, MONTEREY, CALIFORNIA.

or three years. When it is deemed the roots are below the freezing line, or some of them, at least, the mulching and protection are not necessary.

Philadelphia. JOSEPH MEEHAN.

SOPHORA JAPONICA.

I was interested in Mr. Meehan's note on *Sophora Japonica* in a recent number of GARDENING, especially as I had just at that time observed a few specimens of this somewhat rare tree on the lawns of Ithacans. Here where peaches grow, but are not by any means a sure crop, the "pagoda tree" seems to have reached its northern limit, unless specially protected. One tree examined yesterday, planted in 1885, is now about fifteen feet high, with a strikingly symmetrical vase shape and top. On looking closely one sees numerous dead twigs at terminal points, small danger signals, as it were, denoting imperfect ripening of the wood. This tree has never blossomed and the owner is growing impatient, not being content with the soft feathery mass of light green foliage with which it is clothed during the summer. *Sophora Japonica* is superseded in the north by another of somewhat the same type but very much hardier, viz., *Caragana arborescens*, the Siberian pea tree.

JOHN CRAIG.

Ithaca, N. Y.

PRUNUS MAACKII.

Among the earliest trees to leaf out and bloom with me is *Prunus Maackii*, from the Amur valley in Asia. I consider this one of the most valuable ornamental trees we have and trust that before long it will be found in the catalogues of all nurserymen. It is perfectly hardy, transplants easily, and is a rapid grower, standing abuse and drouth. It not only comes into leaf early, but retains its foliage quite late. It is round headed, dense of foliage, and usually comes into

bloom by May 1. The blossoms are pure white in long racemes and are sought after by the bees. Few nurserymen at present seem to have it, but they will not make a mistake if they soon add it to their lists.

W. C. EGAN.

MAGNOLIA SPECIOSA.

ED. GARDENING:—Mr. Egan's note on magnolias was quite interesting to me, as I had been watching the growth of a specimen of the same species for some years. It was planted on the north side of a house, far enough away to receive full sun in summer and yet be shaded in winter, and was fully protected from north and west winds by buildings. For four seasons it grew well and did not lose a tip in winter. Three winters ago it lost about one-third of its head. The following summer it made a good growth, but in winter lost rather more than it gained. Last winter it killed back badly again.

R.

The Flower Garden.

HARDY HERBACEOUS PERENNIALS.

To those of us who grow hardy herbaceous perennials, the exceptionally early opening of spring has brought work which is ordinarily deferred until a month later. The new growth of aquilegias, phloxes, poppies and many others, warns us that the time has arrived for their transplanting and division where necessary.

Judging from the testimony of florists in this city and elsewhere, it seems that the demand for hardy plants is steadily increasing—particularly for the more showy and stronger growing ones—and the time is coming, I believe, when the

public will appreciate many of the choicer and more delicate ones.

At the present time the call in this locality is for delphiniums, coreopsis, phlox, herbaceous pæonies and the early flowering Dutch bulbs. Comparatively few people are acquainted with the glory of the many hardy lilies, the exquisite beauty of the aquilegias, both in flower and foliage; the gorgeous poppies of the oriental types, or the more quiet beauty of the Iceland poppies, with their everlasting profusion of white, yellow and orange bloom, the varied forms of the iris and the multiplicity of campanulas, foxgloves, sunflowers, asters, gaillardias, together with the host of more chaste and less assertive blossoms, which can be grown as easily as coleus or geraniums.

There is probably more art required in the using of perennials than in the construction of a bed of alternanthera, still they are difficult to spoil, for they have a character and individuality about them that asserts itself in almost any situation. Yet there are places and places. On grounds of any size or pretension where there is room for a shrub or a tree, there is room and a suitable situation for at least a few hardy herbaceous plants. There is always some spot by the house; some line to be emphasized; something to be screened or cut off; some tall group to be clothed or brought down to the grass line, where the taller species may be appropriately used. Or there is a warm slope toward the spring sun; some rocky ledge or stony bank; some low spot where the spongy sod oozes to the tread the summer long; some natural or artificial water of greater or less extent; providing places for many a gem that "Comes before the swallow dares;" places for the brilliant natives of our moist meadows; for the beautiful alpine, and for the noble grasses and aquatics. To plant them effectively will require some study, it is true, some consultations with nature and

with common sense—both safe teachers—the former to be easily reached and the latter found occasionally. It is wonderful how much the frame has to do with the picture, in fact becomes a part of the picture. Those who have seengroups of foxgloves and other plants of strong growth planted in the edges of woods, as Mr. Falconer planted them at Schenley Park last year, or who have seen the goldenrods and asters fringing some country road half hiding an old stone wall draped with clematis and shaded with crimson fruited barberries, will understand what is meant by effective planting. While it is undoubtedly true that most of our hardy plants are worth growing for themselves alone, yet there is a beauty above and beyond the individual which the gardener must consider—the beauty of combination of form and color and which should guide him in the selection of plants for a given place or purpose.

Well, what I started out to say is this: The question is frequently asked of me (and this will answer two recent correspondents), "When shall I begin to work up a collection of hardy herbaceous plants?" And I answer, now. It makes no difference what time of year the question is asked, the answer is always the same—begin now. For most plants which are propagated by division early spring is the best time. At this season of the year the members of the plants are full of good impulses, and a little piece that would wither and die if taken off later in the spring or at the approach of winter, will now start off as though nothing had happened and make a good sturdy plant for another season or in the case of some species, for the present summer.

If they are to be propagated from seed, many are better sown in the spring than later, and the rest may be sown as soon as mature seed of the present season's growth can be obtained. There are a few species that would become unmanageable if sown in early spring, but the majority will make far more satisfactory plants for next year if sown now.

JOHN F. COWELL.

SWEET PEA NOTES.

Blessings on your valuable columns for every encouragement given to the sweet pea. We hope that this royal flower will long hold her court at Springfield, Mass., and surely she is preparing to do so again this year. We never need to thresh over old straw to get something worth writing about this flower.

Our Hampden County Horticultural Annual is out, and it is little else than a sweet pea report and schedule of our 1898 sweet pea show. With us there is less encouragement for a chrysanthemum show than for one of our popular annual, and so our county society has planned for the latter only. Our Springfield Amateur Horticultural Society, which is the real working society of this city, usually gives a June and a fall show. This latter society had phenomenal success last June in the matter of drawing a crowd, and, indeed, being an amateur society, we devise every way to keep our work near the hearts of the people.

The schedule for the sweet pea show grows more interesting every year. The Eckford challenge cup, which was offered for the first time last year, is open to competition again. It must be won twice to be permanently owned. Mr. C. M. Hartzell, of Holyoke, Mass., took it last year. I have just been looking over his

rows as planted March 17, and they bid fair to crowd the other fellows hard. I see that he uses level culture, planting two inches deep. Even the Eckford sealed packets he puts right into the ground, and they have germinated finely. I can not do that in my soil. It was peculiar that while Mr. Hartzell's vines last year were spoiled for the time by the fifteen inches of rain that we had in July, they rallied so that he made a fine showing in August; most people suffered total disaster.

The experience of W. J. Eldred, another close competitor, goes to show how all our self-flattered efforts at scientific work are sometimes as unreliable as the whims of a coquette. He planted one-half his stock at home where it would have every attention, and where it did splendidly the year before, and the other half up in the country where it had to take its chances. When blooming time came a man was never rewarded with a meaner mongrel mass than those home rows showed, while a magnificent showing came to the exhibition from the up-country rows. For some occult reason, in spite of intelligent work, the peculiar season destroyed the identity of almost every variety, while the same seed up in the country, where it came later into bloom, gave blossoms true to a dot.

We find it very difficult to fix a satisfactory date for our sweet pea show. Usually our best growers are ready by the second week in July, but two weeks are generally allowed for the tardy ones, a generous concession made by the former at the expense of their exhibit. This year we have put the date July 20 and 21.

At the last show a committee of three excellent judges consisting of O. H. Dickinson, L. D. Robinson and W. J. Eldred was appointed to select a list of sweet peas most desirable for general culture. They named the list in three sections of a dozen each. On the whole it is an admirable choice, but cannot be expected to tally with everybody's judgment. The first dozen are: Aurora, Blanche Burpee, Blanche Ferry, Burpee's New Countess, Firefly, Golden Gleam, Her Majesty, Lovely, Maid of Honor, Royal Rose, Stanley and Venus. The second dozen are: America, Captivation, Countess of Aberdeen, Dorothy Tennant, Katherine Tracy, Lady Penzance, Mikado, Mrs. Eckford, Prima Donna, Ramona, Waverly and Gray Friar. The third dozen are: Apple Blossom, Brilliant, Coquette, Captain of the Blues, Duke of Clarence, Emily Lynch, Lottie Eckford, Meteor, Mrs. Joseph Chamberlain, Mars, Ovid and Senator.

It is unfortunate that Mr. Eckford's recent introductions do not keep pace with the growing interest. Last year's advance list will probably show better form this year, but almost no novelty in color. This year's set will put us a little further along in three popular colors, the bright rose, the orange and the deep maroon. I am sorry to find that Chancellor, the new bright orange, is a poor germinator.

The California novelties give us more originality. The creamy buff shades of the Burpee set and the dark prune blue of one of the Sunset Co.'s novelties are excellent. Mr. Walker is on the road to novelty production, but not there yet. I object to cluttering up the list with striped sorts unless they are of decided merit. We shall bring discredit on the novelty business unless the stripes are given a decidedly inferior value to the self colors. The shifting nature of all the stripes almost debars them from a title to

rank with named varieties. I wish they might go under the name of the selfs to which they belong with the prefix "striped." Otherwise we double the list of names. Of course anything that can win a certificate should have its own name.

It is too early yet to tell whether the American Sweet Pea Society will take shape this year. Probably an attempt will be made at Springfield in July to launch it on its history. My already busy life forbids that I should be enthusiastic about this organization, but I sincerely hope that we now have a sufficient working force on this flower to push it into the dignity of a national society. When such a section of the country as that lying between Rochester, Ithaca and Elmira, N. Y., shows an enthusiasm in any flower we may be sure it is a flower that has a future. Both Cohocton and Elmira are stirred in preparation for sweet pea shows this year.

Our Springfield schedule shows one encouraging feature, that the prize money on which such a show must depend comes in good measure from the seedsmen. This is more likely to become a permanent feature than other methods of raising money. The large growers in California also offer generous assistance which does not appear on our schedule.

Until within a few days my plans were made to again visit C. C. Morse & Co., Santa Clara, Cal., this year, but their latest word reports such a disastrous drought that it will probably be better to postpone the visit till another year. Their novelty work was what I had been invited to come and look over, and I was expecting a rich treat. Unless they had two inches more rain before May 1 the outlook was very disheartening. It would now seem inevitable that there will be a great shortage in all seed crops. In the one item of sweet peas the contracts made led to the planting of a large acreage, but the last advices from there report the shriveling vines as past redemption unless a two-inch rainfall comes to their relief. It was Mr. Burpee's plan also to be there. In my last trip to that state nothing impressed me as more beautiful and grand than the immense blanket of seed stock in different stages of growth, blocked into all shades of green, and lit up with great sheets of color. It is a sight that well pays for the long journey.

But while drought is afflicting them, there is no drought in the east. We are longing for the daily drizzle to cease and the sun to again shine forth. A kind providence favored us with a phenomenal March. I planted my sweet peas the 15th of March, a date earlier than I could ever plant before. But we have had our March in April.

W. T. HUTCHINS.
Massachusetts.

AN ARTICLE in the *Gardening World* (English) gives an account of an interesting experiment in grafting chrysanthemums. With an idea of changing the character of the flowers, the top of a plant of one variety was cut off and the bottom grafted into a plant of another kind, both being planted in one pot, the result being to produce a stem of one variety supported by short stems of two varieties, and nourished by two distinct sets of roots. The experiment, so far as it influenced the character of the flowers was a failure, but it was noted that the plant was much strengthened and the size of flowers increased. It seems quite likely that this process may prove of value in growing exhibition blooms, especially of weak growing varieties.

ORNAMENTAL BEDDING. PART III.

Very often in designs, and especially in scroll work, circles with different radii are joined so that there is no break at the intersections, no matter how much difference in size. This is only the case when the circles intersect on the mutual diameter. Fig. 7 will explain this better than words.



Fig. 7.

These spirals consist of semi-circles of different size, meeting each other on the dotted line in which also all the centers lie. Consequently, if you have a design with this kind of intersections, you must find the two centers, draw a line through them and the intersection is where this line cuts the curve.



Fig. 8.

Fig. 8. 1, *Alternanthera amœna spectabilis*; 2, *A. aurea nana*; 3, *A. spatulata*. Here is an example of this kind, the intersections marked with crosses. This

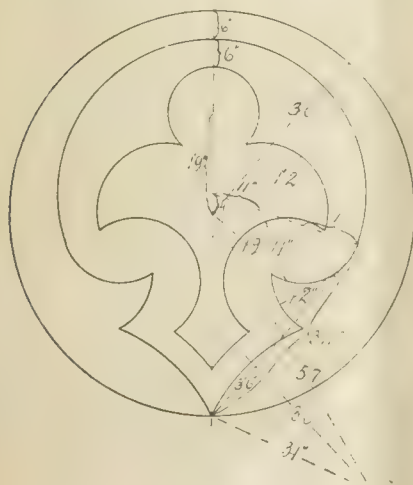


Fig. 9.

is also a different kind of a design as it is symmetrical on the diameter and not on the radius as the preceding ones; we cannot find the centers by division, but must "shoot centers" using two convenient points as the base of construction. These designs are more difficult to lay out, but much prettier than the others, and can be used with more success for smaller beds. Fig. 8 for instance is for a seven foot circle. A working sketch would look like Fig. 9.

Three of the centers are in the diameter; the others are found by using two tape-lines, putting the rings at the ends over the points indicated (main center and lower end of diameter) and adjusting them until the respective measures meet, and then we put a peg there; find the cor-

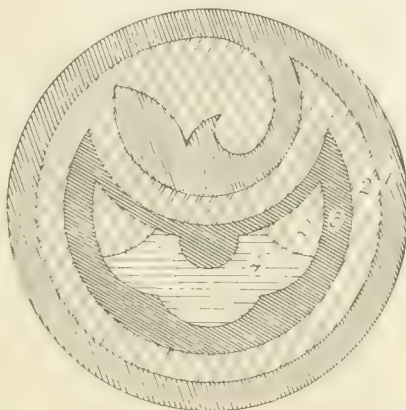


Fig. 10.

responding center on the other side, draw the respective curves, find the next two centers, etc., mark the lines as you proceed. If you have only one tape line, slip the ring over one of the main points, draw with the indicated distance as radius a short curve on both sides, about where you judge the centers to lie, repeat this operation from the other main point, and the two centers are where the curves intersect. Figs. 10 and 11 are two more examples of this kind.

Fig. 10. 1, *Alternanthera amœna spectabilis*; 2, *A. aurea nana*; 3, *A. spatulata*; 4, *Santolina incana*.

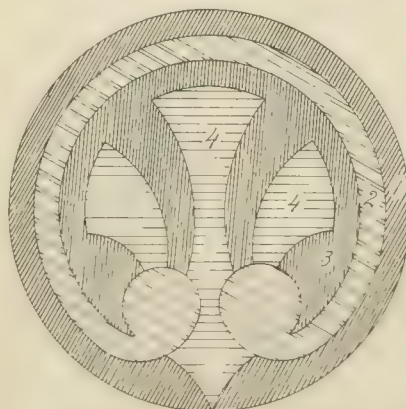


Fig. 11.

Fig. 11. 1, *Alternanthera spatulata*; 2, *A. aurea nana*; 3, *A. amœna spectabilis*; 4, *Santolina incana*.

H. HANSEN.

COLORADO HORTICULTURAL SOCIETY.—The directors of the Festival of Mountain and Plain have offered the society \$1,000 in prizes and ample room to hold its annual show in Denver at the time and as a part of the festival.

Miscellaneous.

PONDS AND LAKES FOR AQUATICS.

Too often, unfortunately, we may still see ponds of circular or oval shape with banks secured by stone walls or pebbles set in cement concrete that show above the water line. This may do for the horsepond of a farmyard, but it will not do for a water garden. If it is worth our while to make a pond at all it should be also worth our while to pay attention to nature's most simple laws with regard to beauty, and when an artificial pond shows in its shore line curves that could not possibly have been formed by nature the effect is repulsive. When writing of water in the rock garden I mentioned that a pond in most cases should be treated as an expanded streamlet, and the curves of large ponds or lakes give no exception to that rule. A natural pond with a bold projection or promontory on one side will almost invariably show a still bolder recess on the opposite shore, and vice versa. If such projections are covered by vegetation that hides a portion of the water, so that from no point the whole of the surface can be seen, the effect will be all the more picturesque. A good example of this may be seen in the lakes at Birkenhead Park, which, in consequence of this partial obscuring of the water from certain points, appears much larger than it really is.

In the case of a broad stream or river flowing through some meadows within sight of the house, the simplest way to produce a pond or lake would, of course, be to widen the stream or river to the size that would seem most desirable. But if the pond and its banks are intended for a water garden this course would not be the most practical if the flow of water is at all rapid, because, after heavy rains, when the river swells and floods its surroundings, there would not only be a danger of the water plants being carried away, but silt, gravel and river mud would quickly fill up all recesses and thus practically destroy the beauty of the pond and choke the plants. The best plan in such a case is to "tap" the river, conduct the water intended for the supply of the pond some distance away from the original stream, and finally let overflow rejoin the river at a lower level. If the water is first conveyed in pipes, and made to flow in an opposite direction to that of the river, the danger of chokage by mud or silt will be entirely avoided. When laying out some grounds at Great Marlow a few years ago I made a most successful pond in the way just described, by tapping the river Thames. In most cases it may also be advisable to cover the mouth of the pipe by wire netting to keep out water rats and other vermin. There is no reason why water drawn in this way from a river should not, at some little distance from the "tapping place," reappear in the shape of a natural streamlet before filling the pond, and here and there its water-soaked banks might become the home of all kinds of most suitable as well as beautiful plants. In like manner the water emerging as overflow from the pond might form a picturesque brook of any desirable length with or without waterfalls before rejoining the river.

In a case like the preceding, where the water supply would be practically unlimited, the comparatively small waste of water through absorption by the banks, and perhaps also by the bottom of the

pond, would hardly need comment. But where the supply is scarce and the bottom and sides of the pond are of a porous nature, the latter would have to be either "puddled" or covered with concrete to prevent waste. Concreting on a large scale is always expensive work, and clay puddle, especially on the sides of banks, is very apt to be injured by water rats, to crumble away after a severe frost, or be washed away by the ripples of water moved by wind. Sometimes it so happens that the sub-soil consists at a certain depth of a tough clay which no water could penetrate, but that the soil at the required water level is of so porous a nature that it would not hold water. Naturally the first impulse in such a case would be to excavate the pond to the depth of the natural layer of clay, and then form banks of clay puddle at the sides. But there is a much cheaper and more simple plan. Instead of excavating to the clay, excavate only to a depth sufficient for growing aquatics (say two or three feet), and instead of piling up clay against the sides leave the sides untouched as much as possible, preferring the natural slope of the ground to dip below the water line. To prevent waste percolation surround the whole pond by a trench about eighteen inches wide excavated beyond the depth of the natural clay sub-soil. The whole of this trench should then be filled with clay-puddle to a height extending slightly above the water level, filling up the remainder with ordinary soil, so that the whole is completely hidden. The trench should not be close to the shore line, neither need it follow the curves of the shore, but, as it would be invisible when finished, it might even be perfectly straight in some places if this would be a saving in distance. The advantages of this system are obvious. The water-tight puddle would be situated where it would neither wash nor crumble away. But the greatest advantage is that the ground intervening between the trench and the actual outline of the pond would be continuously soaked, and a natural bog for plants that love the waterside is thus formed without much trouble.

Very frequently a pond most suitable for a water garden can be formed by throwing a dam across a valley traversed by some streamlet. Generally this is effected by a straight or slightly curved wall, which is afterwards covered with soil, turf and plants with an opening from which the overflow water may emerge as a waterfall. As a rule such an opening is left near the middle of the dam and looks most unnatural, because the overflow emerges from what would be the broadest side of the pond. In nature this could scarcely ever occur. If we observe the natural formation of ponds, we find almost invariably that a streamlet becomes gradually wider and wider till a lake-like expanse is formed; it then almost just as gradually contracts, and finally emerges again as a narrow streamlet. If the dam has to be made it would, therefore, be much more natural to have two walls gradually contracting till the desired outlet or overflow is provided. Any formal edging of stones or any other material around a pond would at once deprive the latter of all natural appearance, however carefully it might have been constructed. The best way of securing the shore line against crumbling and washing is to round off all edges till they form a gentle slope, and then lay down long pieces of good tough turf, which should be continued quite a foot below the water mark, and should be

further secured by long sticks driven firmly through them and into the bank.

Islands in ponds should be arranged with due regard to such formations in nature. In natural lakes we find them not often in the middle, but generally just beyond a promontory, where they would justify the idea of having been severed from the mainland by the breaking through of the water, or if they are of a rocky nature by upheavals from the bottom. A circular mound of soil in the middle of the pond generally looks as ugly as can be, and most unnatural — F. W. Meyer, in *The Gardeners' Magazine*.

PARK AND OUTDOOR ART ASSOCIATION.

We have received the preliminary announcement of the Minneapolis meeting, to be held June 22, 23 and 24. Headquarters of the association will be at the West Hotel, at which the rates are \$3 per day and upward. Minneapolis is readily accessible from all points by rail. Eastern visitors can take advantage of the fine boat ride through the great lakes from Buffalo to Duluth via the Great Northern Steamship Line. Such special hotel and railroad rates as are secured will be announced later. Mornings of the 22d (Wednesday), the 23d, and the entire day of the 24th will be given up to business, papers and discussion.

The retiring president will address the meeting and the following papers have been promised: W. W. Folwell, "Playgrounds and Plazas"; Jno. H. Patterson, "Landscape Gardening," illustrated by the stereopticon; Fred Kanst, "Plant Propagation for Parks"; B. E. Fernow, "Esthetic Forestry"; Chas. M. Loring, "Tree Planting on Public Streets"; O. C. Simonds, "Appreciation of Natural Beauty"; Orlando B. Douglas, "The Relation of Public Parks to Public Health"; Chas. N. Lowrie, "Small City Parks and Open Air Breathing Spaces"; J. A. Pettigrew, "Park Woodlands and Plantations"; A. C. Clas, "The Architect and the Landscape Architect"; C. Wahl, "The Duties of Park Commissioners."

It is expected that Mrs. Robert Pratt will present the work of children in improving the surroundings of their home and school grounds, and that she will have the assistance of ladies and gentlemen of other sections of the country who have taken an active interest in this work. A more complete list of authors, papers and titles will be sent to members before the date of the meeting.

At some time during the afternoons or evenings of the 22d and 23d a banquet is to be given by the citizens; an opportunity is to be given for an examination of the park system, and the invitation of Mr. F. H. Peavey to visit his estate upon the shores of Lake Minnetonka and to take a boat ride upon the lake will be accepted. At the close of the meeting arrangements are to be made for an excursion to the Interstate Park at the Dalles of the St. Croix. Warren H. Manning, of Boston, Mass., is secretary and treasurer.

TRANS-MISSISSIPPI EXPOSITION.

The Trans-Mississippi Exposition, which will open at Omaha June 1, is now well under way. Everything bids fair for a grand display so far as the horticultural exhibits are concerned. The space in the horticultural department is all well taken, and nearly every Trans-Mississippi state, and a number of others, will be well represented. One of the best features is to be the "Fruit Days." The authori-

ties have set aside six or more days when various fruits will be shown in great quantities and given out to all visitors. So far as arranged for, these days will be "Peach Day," "Strawberry Day," "Grape Day," "Apple Day" and "Melon Day." It is expected that two or three other days will be arranged for additional fruits. On the lawn and about the horticultural building will be bedding exhibits by about twenty of the very best growers of such stock in the United States, including the very best growers of Pennsylvania, New York, Illinois and elsewhere. The grounds are ample to accommodate the best arrangements of the most extensive growers in every department of horticulture and floriculture. Present indications point to the conclusion that every one visiting the exposition will be well satisfied with the arrangements which have been made in every department.

THE HORTICULTURAL BUILDING.

Placed in the Bluff tract, the horticultural building is a magnificent central feature, around which are clustered the various state buildings and some amusement buildings. It is 130x310 feet in dimensions and 160 feet to the top of the belfry, which will contain the chimes. The building is to house the floral, fruit and forestry exhibits and is admirably adapted for the purpose, the high dome, covered with glass, permitting the exhibition of the tallest ornamental plants. In the center of the dome will be placed the crystal cave in a pyramid of rocks covered with mosses and flowers and down the sides of which will trickle countless little streams to the pool below. This pool will be surrounded by a double colonnade with vaulted arches, forming a grand circle. Unrestricted as to motive, or form and surroundings, the architect has succeeded in producing a building singularly striking in its effective features. While a classic motive has been adopted, it has been handled with an unconventional freedom that gives to the whole a rich oriental effect. The basis of design is the chaste Ionic. The details are modeled from flowers, fruits and foliage. On either side of the stately central entrance are towers, or rather mosque-like minarets. This feature is reproduced on four sides, forming an octagon from which springs the dome. Between these minarets are placed circular colonnades, surrounded by statuary emblematic of the seasons. Above the dome is an open observatory balcony from which can be obtained a grand view, not only of the exposition grounds but of the city and adjacent lakes, the picturesque valley of the mighty Missouri, and the lovely city of Council Bluffs five miles away. Above this open balcony is the belfry. At the ends of the wings are octagonal-roofed pavilions in harmony with and emphasizing the general form of design. The wide frieze is beautifully ornamented with cupids, in riotous reveling amid fruits and flowers. On either side of the main entrance, on high stylobate, are placed groups of statuary representing "Night" and "Morning," festooned, the one with morning glory and the other with night blooming cereus. The building will be profusely decorated with flower urns, hanging baskets, and ornamental plants of every description from semi-tropic climes. The execution of the design and scheme is original and the grouping of features, with their exquisite detail, will make this one of the finest buildings of its character ever erected. The design is the work of Architect Charles F. Beindorff, Omaha.



HORTICULTURAL BUILDING. TRANS-MISSISSIPPI EXPOSITION, OMAHA.

PARK NOTES.

In the development of parks thoughtful consideration should be given to the question of future maintenance. Additions to improved sections, from year to year, requiring increasing appropriations, are apt to be forgotten or ignored by those entrusted with the responsibility of making provision for the maintenance of parks, the result being that the character of maintenance falls below the standard required to give satisfaction to the public. Each new path or extension of a drive, and each new plantation adds to the cost of care. It behooves, then, the park maker to keep this fact prominently before him, and to eliminate from his plans all expensive embellishments, all unnecessary paths or roads or other features entailing large expense for subsequent care. The tendency of the day is out of all proportion to the benefits derived. Large ranges of glass are maintained for growing tender plants for bedding; this is an expensive leech to satisfy and makes large drafts on the maintenance account.

Simplicity of design in park construction is the most pleasing to the eye, and simplicity in design carries with it economical maintenance. Wide stretches of grass and masses of trees and shrubs are among the most important elements in park scenery. In combination they produce our finest landscape effects and offer attractions varying with each season.

Natural groupings of native or hardy plants are more effective than ephemeral floral displays of exotic bedding plants, while the labor and care of maintenance is very much less. Hardy plants, too, have the additional merit of interest and length of season. From the pushing through the snow of the snowdrop in the spring until the last anemone has succumbed to the freezing breath of winter, what a succession of beautiful forms greet the eye from month to month.

Roads and walks serve no purpose but that of utility. Their care is an expensive burden, therefore they should never be laid out where not absolutely neces-

sary; excellence of construction makes easy the subsequent care.

Park buildings should be plain in design, of good construction and materials, without elaborateness of finish either inside or outside; common brick, ivy covered, will in most cases meet the requirements with the least expenditure for maintenance.

Narrow strips of grass bordering driveways may be somewhat more cheaply maintained by planting them with shrubs of low growth, in a solid mass. This method has been adopted for several years past by the Brookline, Mass., Park Department on its driveways, and the effect is very good. The plants used are *Rosa lucida*, *Berberis Thunbergii*, viburnums, cornels, rhododendrons, etc. The variety of bark coloring makes the winter effect very pleasing, nor is the effect at any time monotonous, so varied are the changes from colored bark to budding leaves and bloom, and from bloom and fruit to autumn colored leafage.

The general lack of adequate funds for maintenance work in parks is a matter of serious thought for park managers. Money and time spent in construction is nullified if subsequent care can not be given to roads, walks or plantations.

The difference between success and failure lies sometimes in the neglect of little things, whether the cause of neglect is beyond the control of the park manager is scarcely considered by a generalizing public.

J. A. PETTIGREW.

LAWN GRASSES AND WHITE CLOVER.

ED. GARDENING:—I note in your issue of May 1 a reference to a "good and well kept lawn of blue grass and white clover." In this locality (Cook county, Ill.) a lawn can not be good and well kept unless thoroughly watered. White clover, while very desirable for grass plots which receive no water, other than that supplied by the rainfall, is not to be recommended in other cases. Blue grass is the grass for lawns, and the ideal lawn for this climate should consist entirely of blue grass. As this is slow of growth a

mixture of two-thirds bluegrass and one-third red top may be used to good advantage, as a good effect can be produced quicker in this way, and the blue grass will ultimately take entire possession of the lawn.

R.

GHEENT QUINQUENNIAL SHOW.

An international horticultural exhibition has just been held (April 16 to 24) by the Royal Agricultural and Botanical Society of Ghent, Belgium, and was a very extensive and successful affair. The society is about 90 years old, and this is its 163rd exhibition, being the fourteenth international one, the latter exhibitions being held every five years.

TORONTO HORTICULTURAL SOCIETY, TORONTO, ONT.—This society has a membership of 100, including amateur floriculturists, leading commercial growers and gardeners of public institutions. The society has a government grant in addition to the dues of its members, and its meetings are made valuable and interesting by papers and discussions upon the several lines of value to its members. The society gives an annual chrysanthemum show in November.

SALT LAKE COUNTY HORTICULTURAL SOCIETY, SALT LAKE, UTAH.—The question of spraying was brought before this society on May 7 by the State Board of Horticulture, which is taking active steps to teach growers that greater care must be exercised in producing sound fruit. The Idaho inspector has notified the Utah board that in case fruit from Utah is as badly infested with worms as was the case last year its importation into Idaho will be prohibited. To expedite the eradication of the pest the board has prepared suitable rules for the disinfection of orchards. The board believes spraying to be efficacious and points to the results obtained by James Barker, of North Ogden, S. O. Neilson, of Fairview, and William Wadleigh, of Pleasant Grove, as a demonstration of the worth of the process.

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GARDENING is gotten up for its readers and in their interest, and it behooves you, one and all, to make it interesting. If it does not exactly suit your case, please write and tell us what you want. It is our desire to help you.

ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS or SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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THE olive growers of Escondido, Cal., will organize an association having for its purpose the study of the growth and curing of olives and the ultimate establishment of an olive plant.

THE Secretary of State of Illinois has licensed the corporation of The Effingham County Agricultural Board, at Watson, Ill. The incorporators are D. L. Wood, H. Ruffner and T. P. Mantz.

A COMMITTEE consisting of Messrs. W. Warnaar, L. Van Leeuwen and Baartman passed through Chicago, May 15, en route to Washington to investigate the bulb growing prospects of that state.

TENT CATERPILLARS are reported by Mr. Murkland, of the New Hampshire Agricultural Experiment Station, as readily attacking the foliage of roses. Spraying with Paris green is recommended.

IF YOU are starting any perennials from seed, remember that they are generally slower to germinate than annuals. Therefore do not throw away the seed boxes until you have given them a good chance.

PRINCE THEODORE, GALITZINE, a new orange yellow tea rose, will be sent out this spring by Messrs. Ketten Bros., of Luxemburg (Grand Dutchy). It is described as being very large and full, long buds, stiff stems and very fragrant.

THE San Jose scale has been found on nearly all classes of nursery stock, both fruit and ornamental, commonly grown in northern nurseries.

APHIS on young nursery stock can be controlled by dipping the infested tips of branches in a solution of whale oil soap, one pound to seven gallons of water, according to a late bulletin of the New York Experiment Station.

THE NEW climbing rose Psyche, originated by Messrs. Paul & Son, Cheshunt, England, is a cross between a Polyantha rose and Crimson Rambler. The flowers are of good size, very double and of a light rose tint.

MANY of us, especially those employing gardeners, always raise a few more seedlings than we use ourselves. Do not throw away the surplus, but hunt up some poor woman who loves flowers and gladden her heart by a donation.

In planting roses this spring, climbing or bush forms, cut them back to within six inches of the ground, unless you are buying plants in pots and in active growth. This rule applies to the various forms of woody vines, Boston ivy, akebia, etc.

PRUNUS TRILOBA is at its best and a glorious sight it is. Its pink rosetted flowers cover the limbs as thickly as the cells in a honeycomb. The best time to cut it back, where needed, is when the flowers are past, thus insuring specimens of good form for next year's blooming.

TESTS at the New York Experiment Station show that spraying carnations with salt water is of no value in checking rust, and no benefit could be seen in any way from such applications. The application of salt to the soil was found to be decidedly injurious.

M. LEMOINE, of Nancy, France, will send out, soon, several double and semi-double flowered varieties of Begonia semperflorens which he has succeeded in raising. If they retain the vigor of growth and free flowering character of the single varieties they should be very valuable acquisitions.

HIBISCUS MANIHOT, the handsome tender perennial that blooms so late the first year from seed that the frost often catches it, can safely be carried over winter if taken up and kept in a dry frost-proof cellar. If then started in a hot-bed it will bloom much earlier.

AT the annual meeting of the Florida Horticultural Society to be held this month it is announced that papers on tobacco culture will be presented. Horticulturists do not generally discuss methods of growing "weeds" but tobacco may claim their attention because of its "bouquet."

IF planting clematis this spring against the house, porch or fence, run strings up for their support, using hempen twine, which is strong enough for one season's growth. In the fall cut string and vine down to within a foot of the ground. If well done it is neater than wire, and being removed in the fall is not a winter's eye-sore.

THE CANNA LEAF ROLLER is a source of considerable annoyance to canna growers in some parts of Florida. In bulletin No. 45 of the Florida Experiment Station Mr. A. L. Quintance gives a full account of the insect and its life history. The only remedy suggested is picking and burning the infested leaves and trash

from the buds, as the insects pass the winter in them.

ROLLIN ELLISON, of La Grange, Ind., has this spring set out 1,000 peach trees, 1,200 cherry trees and 1,500 plum trees, and in the fall will set out a second 1,000 peach trees. In this orchard of thirty-two acres he has constructed a complete system of underground tillage through which water will be passed as soon as drouth begins, thus affording a practical test of sub-watering which will be watched with general interest.

THE EARLY blooming tulips, Belle Alliance, a vivid scarlet, and Chrysolora, a pure yellow, are very reliable and sure bloomers, making a handsome combination when planted in masses. Those who planted them last fall had no idea that they might be charged with unpatriotic sentiments this spring for having the Spanish colors so prominently set out, but if so accused they can escape by answering, "Yes, those are some Spanish colors we have captured."

A NEW way of watering street trees is now adopted in Berlin. Around each tree and at some distance from the base of the stem small well-like excavations are made, and the inside of each is lined with earthen tiles, the sides of which are perforated with holes. These tiles are set vertically, their ends being closed with plates of cast iron like those used for stopping up the ends of water pipes or gas pipes. When the tree is to be watered, the well-like excavations are filled and the water is thus distributed exactly on the outside of the circle, where the rootlets of the tree occur. In this way a saving of water and of labor is effected.

EVAPORATED vegetables is an industry carried on by Mr. F. A. Pulline, of Lobethal, South Australia, who, according to an Australian contemporary, is "making a name for desiccated vegetables and fruits; and, although several others are in the habit of evaporating fruits on a large scale and make a first class article, he is the only one, so far as we know, who deals with vegetables during the off season for fruits. Carrots, parsnips and potatoes are reduced to about one-eighth part of their original bulk and weight; onions are brought down to one-twentieth part. Reduced thus in bulk and weight, vegetables can be transported to distant parts at a very moderate cost and they will keep perfectly good for two or three years. When required for use the articles are soaked in five or six times their weight of water for twenty-four hours, when they are ready for cooking like fresh vegetables."

THE WOODS north of Chicago all the way up to Waukegan are enlivened with the bloom of the juneberry, often called the shad bush in the East, as it is supposed to bloom at the time of the "shad run." It is the *Amelanchier Canadensis* of botanists, and there are several varieties, wild and in cultivation, including a dwarf form that is being grown as a garden fruit. If you want to transplant some to your own grounds, especially at the edge of a wood, if you possess one, hunt up some small vigorous specimens, preferably those standing alone, and dig a moderately deep trench around them, from one to two feet away from the trunk, according to the size of the tree, severing all roots outside the ball. Return the soil, and next fall take them up. In transplanting commence your digging outside the trench and endeavor to retain all the new roots.

It is well to head in the tree a little at time of this spring cutting of roots and again in the fall. Nurserymen can supply specimens almost sure to grow at a small price.

SOME of our readers may not have facilities for watering either new plantations or their regular grounds. It may be well for them to bear in mind that frequent and thorough tillage of the soil around the plants is not only a good substitute but by some considered preferable. As a rule there is enough moisture in the soil to sustain plant life, if conditions are such that it is available. Frequent stirring of the ground is beneficial in two ways: First, it aerates the soil, which is essential, for a plant may be smothered pretty much the same as the genus homo. Secondly, it makes the soil porous, and thus ready to absorb what rain or heavy dew may fall upon it; moisture from below is also borne upward by capillary attraction, and its passage creates minute channels in the soil, which in time reach the surface and allow the moisture to escape. Stirring the surface destroys these escape channels, and, as it were, places a blanket of finely pulverized soil over them, thus retaining the moisture for the benefit of vegetation.

WE HAVE RECEIVED the preliminary programme of the twenty-third annual convention of the American Association of Nurserymen, to be held at Omaha, Neb., June 8 and 9. There will be discussions at the sessions of matters of vital interest and reports of committees charged with important duties in the interest of nurserymen. Those who will address the meeting, and their subjects, so far as known at present, are as follows: Irving Rouse, of Rochester, N. Y., President's address; Prof. S. M. Emery, of the Montana Experiment Station, Bozeman, Mont., "Fruit Prospects in Montana"; Prof. F. W. Taylor, of Lincoln, Neb., "Relation of Agriculture to the Exposition"; Hon. C. L. Watrous, of Des Moines, Ia., "A Little Matter of Business"; Hon. N. H. Albaugh, of Tadmor, Ohio, "Is the Insect Agitation of the Present Day a Good or Bad Thing for the Nurseryman?" President Gurdon W. Wattles, of the Trans-Mississippi and International Exposition, will address the members and welcome them to the city of Omaha and the exposition.

THE results of thinning fruit are given by Prof. S. A. Beach as follows: "From a Baldwin tree, heavily loaded with fruit, all wormy, knotty, and otherwise inferior fruit was removed and all clusters thinned to one fruit. A similar tree was left unthinned for comparison. The thinned tree yielded about 14% less marketable fruit than the other tree, but 10% more of its fruit graded No. 1, and it had one-third as many culls. Three trees each of Baldwin and Greening were thinned as in the first case and in addition enough more fruit was removed to leave the remaining fruit four inches apart. Three trees each of the same varieties were left without thinning for comparison. The thinned Baldwins gave about 21% less marketable fruit, than the unthinned ones, but 22% more of it graded No. 1. The thinned Greenings gave about 6% more marketable fruit than the unthinned ones and about 10% more of it graded No. 1. A tree of Hubbardston was thinned, as in the other cases, except that the apples were left about six inches apart. Another Hubbardston tree was left unthinned for comparison. The thinned tree yielded about 20% less fruit than

the unthinned one, but 17% more of it graded No. 1. In all cases the thinned fruit was so much higher colored than the unthinned fruit of the same grades that the increase in its market value, due to thinning, was estimated at 10 to 15%. The thinning and picking took about twice as much time as the picking of the unthinned fruit."

WHAT A PEST a beautiful flower can become! Any one who has examined closely a dandelion blossom, especially under a magnifying glass, must confess that in itself as an individual flower it is handsome; but when you apply the rule, "Handsome is that handsome does," its beauty dwindles away with astonishing rapidity. When it once becomes established in any given locality it cannot be eradicated without the consent and active co-operation of the entire community. One small unmolested back yard can by the aid of friendly winds seed a whole township. We have our national holidays and our Arbor Days, why not dandelion days, on which all turn out and fight the pest. Two methods of extermination should be adopted. First dig the plants up as fast as can be done, endeavoring to get them out root and all. Cutting the heads off just below the surface is but a makeshift, as at this point two or more heads are developed next season and you have a much larger plant. The removal of the roots takes time, and while it is going on the second method of extermination should be practiced. This consists of picking the flowers daily to prevent seeding. All flower heads and plants should be burned; thrown in a pile they will mature their seed seven when severed or out of the ground.

PLANT LABELS.

Every gardener has been annoyed times without number at the loss of the labels of valuable plants by reason of the rotting away of the thin wooden labels ordinarily used, or of their becoming illegible. Nearly all of the indestructible labels in use are either expensive or require too much time in preparation.

For cheapness and convenience combined we have found nothing so good as sheet zinc cut to the proper form, using a chemical ink for the writing. The ink is made by dissolving a few crystals of chloride of cobalt in water, and can be used with a clean steel pen. The writing is allowed to dry without blotting and makes an indelible black stain. Labels of this kind have been buried in the ground for over four years and remained perfectly legible. These labels can be attached by tacks or copper wire to orchid cribs. They can be bent into hoop form and forced down to "straddle" the edge of a pot, or can be used with the seed, inserted in the soil as an ordinary label. For outdoor use they can be attached to a piece of heavy wire; telegraph wire answers nicely. The wire is forced into the ground leaving the label suspended or lying on the ground or buried in the ground, as desired.

A very convenient form for tree labels is made from a strip of zinc twelve inches long and one inch wide. This is cut diagonally from a point one inch from one end to a point on the opposite side one inch from the other end, this making two labels with one end square for the inscription and the other tapering to a point. The tapered portion can be twisted around a branch of the tree and will not strangle it or cut the bark, as it expands with the growth of the tree. X.



JOHN ASH.

WORKERS IN HORTICULTURE. IX.

The subject of our present sketch, Mr. John Ash, is among the most successful of the young gardeners of the present generation. An Englishman by birth, his experience in horticulture began in that country when he was thirteen years of age. His first employers were Messrs. A. Goodwin & Sons, nurserymen and seed merchants of Derbyshire, with whom he served four years. He was afterwards engaged in several of the more important private gardens in England, including Alton Towers, the country home of the Earl of Shrewsbury, under Mr. Thomas Rabone. He was also at Knowsley for a time, the Lancashire seat of the Earl of Derby, under Mr. Frank Harrison. On leaving Knowsley he came to this country and was fortunate in securing a position with Mr. F. L. Harris, gardener to H. H. Hunnewell, Esq., of Wellesley, Mass., where he remained two years. Later he was in the employ of Mr. James H. Bowditch a landscape gardener of Boston, Mass., and finally settled down in his present situation as gardener to Miss E. J. Clark of Pomfret Center, Conn. Here he has distinguished himself in various ways, especially in the cultivation of grapes under glass. In a future issue he will tell our readers how he manages to grow the fruit with which he takes so many prizes at the exhibitions.

Fruits and Vegetables.

SECURING A CROP OF GRAPES.

It is not too early in the season to form plans for the preservation of the grape crop. The damage to unprotected fruit by fungus and insect attacks is so great that where nothing is done to prevent them, but little fruit is to be had.

With grapes of somewhat tender foliage, liable to fungus attacks, such as those of the Rogers' hybrid type, it is best to rely on spraying with copperas mixture, but with those of hardy foliage, such as the Concord and its seedlings, bagging the fruit answers all purposes. I prefer bagging where it will answer, because it not only keeps off fungus germs, but bees as

well. Bees are most destructive to ripe fruit, and with grapes will quickly destroy bunch after bunch.

Bagging should be proceeded with just as soon as flowering is over. A common paper bag placed over the embryo bunch, its mouth twisted tight and perhaps held so by a pin, is a guarantee of a perfect bunch. These bunches when ripe and uncovered show a perfection of appearance wanting in those not so treated. Amateurs would be much pleased with their work when the bunches were ripe, as they would have perfect fruit with but little trouble.

Where spraying is thought necessary, or where it is preferred, a commencement should be made as soon as flowering is over. Blue stone (copperas), five pounds to 100 gallons of water, with the addition of ten pounds of lime, I have found to make a reliable mixture. This is for fungus pests. In districts where insects are also troublesome, put about a half pound of Paris green with it, and the mixture is complete.

Spray the vines as soon as flowering is over. Repeat the operation in three weeks, and again four weeks later. This may be sufficient for the season, unless heavy rains wash the mixture off, in which case another spraying may be applied.

JOSEPH MEEHAN.

Philadelphia.

RASPBERRIES FOR WISCONSIN.

In looking over the comments of the many raspberry growers in our state, I find great diversity of opinion as to what is best to plant, and how to cultivate. It is generally conceded that it is absolutely necessary to give all raspberries, without regard to variety, winter protection, by laying them down and covering with earth; still, a few extensive growers in the southern part of the state give no protection and succeed fairly well. Good clean cultivation, with frequent stirrings of the soil, is accepted as the best mulch possible for the bushes during the fruiting season.

At the Experiment Station, while we have a great many varieties on trial, our main planting for experiment work consists of the old standard varieties, Gregg and Cuthbert. During the past summer, in observing a trial plot of several seasons standing I noticed that Spry's Early possessed many good qualities. The individual merits of this berry should recommend it to every lover of a good blackcap raspberry. The Nemaha has been extensively planted in the northern part of the state and has been highly spoken of. Our experience with it proves to us that the plant lacks vitality to ripen properly the enormous crop of berries which it sets, thus giving us a small seedy fruit.

For market purposes the red varieties are superseding the black. The Loudon is undoubtedly a fine berry, still it does not equal the old Cuthbert on our grounds at Madison in growth of cane or quality of fruit. Of the purple varieties, I notice that during the present mild winter, whenever the canes of Schaffer's Colossal were exposed to the weather they winter-killed badly, and undoubtedly during one of our severe winters they would die, root and branch.

Great claims are made for the Columbia by growers in the vicinity of Fort Atkinson, where it is grown by the acre, with no winter protection and excellent results.

Some of the catalogues this spring are still extolling the merits of the Golden mayberry, strawberry-raspberry and

Japanese wineberry. These monstrosities of the raspberry family are absolutely worthless, for the Northwestern states at least.

W. J. MOYLE.

Madison, Wis.

THE CURRANT BORER.

ED GARDENING:—I have tried your remedy for currant borers (removing and burning infested canes) for three years. The canes all being infested each year and the result of the "cure" is no currants with the trouble recurring each year. Is there no other remedy? L. MURPHY.

[We do not know of any remedy other than that mentioned in our last issue. Some currant growers among our readers may be able to suggest a more efficient method of dealing with the pest.—Ed.]

GREENHOUSE PESTS, SAN JOSE SCALE AND LEGISLATION VERSUS INSECTS.

At a recent meeting of the New York Florists' Club, the following valuable paper was read by Prof. John B. Smith:

The topics are wide, and either would furnish a text for a sermon if treated at large; but I will content myself with making suggestions rather than exhaustive and exhausting descriptions.

All rational methods for the destruction of insects, indoors or in the fields, must be based upon a knowledge of the character of the insect to be dealt with, of its life history and of the way in which the destructive agent is expected to work.

In the greenhouse where leaves and flowers are the desired products, many methods that are available in the field, become useless. The plants are more delicate, the foliage is more tender and the flowers must be guarded from anything that will tend to discolor or in any way injure their perfection.

We must attempt to arrange our practice so as to destroy the insects without harming our plants, and the selection of a proper agent is sometimes difficult. First, it is important to know how we kill insects. Of course in those cases where the creatures eat the leaf tissue and we use arsenicals the matter is simple. The poison acts through the stomach exactly as if some higher animal were the victim. But stomach poisons, especially arsenicals, are rarely desirable in a greenhouse, and the insects against which they are necessary are not among those that are most destructive.

Most of the greenhouse pests are suckers and creatures that live on the plant juices and merely puncture the outer tissue to get at the liquid within. Creatures like that cannot be reached by stomach poisons until we learn how to poison the plant circulation itself.

Of course the damage caused is in direct proportion to the number of insects present. A single plant louse, for instance, can do little harm on a carnation leaf, for example—it makes a puncture or two, exhausts a few cells and dies. The amount of sap taken is insignificant, and not in the least a drawback to the plant. Locally we see a minute yellow spot, and if the leaf be held up toward the light and examined with a glass, a thin spot of exhausted plant cells is seen. With a higher magnification we may see the minute puncture itself. But this is not all, unfortunately. Bacteria and other disease germs are constantly present in the air and on the plant surface; so long as this surface remains unbroken they are harmless; but so minute are they that

even the slightest wound gives them entrance, and the puncture made by a plant louse is more than sufficient. The exhausted and partly decaying cells injured by the insects form an excellent culture medium for the micro-organism and soon the minute spot begins to grow. Then we find a bacteriosis of carnations fully established and now a germ disease instead of an insect must be fought.

I do not mean to assert that all cases of bacteriosis are started in this way, for any skin wound will serve equally well; but it cannot be doubted that in a large percentage of cases the origin of the disease is from an insect puncture. As the insects increase in number, their injury becomes more severe. Yellow spots multiply and the plant begins to feel not only the loss of sap, but the failure of the leaves to exercise their proper function. The disease centers are equally multiplied and the plant becomes physically unfit to perform its work of producing perfect flowers in satisfactory quantity.

We get, then, one very important suggestion here—keep plants as sound as possible and deal with insects at once, when they are few in number, not when they have become so numerous that the plants are practically unable to recover. We must always remember that plants are living beings and responsive to both good and bad treatment. They are as variable in their resisting powers to outside influence as are the members of the animal kingdom, and the one in the best physical health in either case, stands the best chance of altogether avoiding injury.

To understand just how contact poisons work on insects we must consider for an instant the general anatomy, and particularly their mode of breathing. Insects have no closed system of blood circulation such as we find in higher animals. There is only one long tube more or less divided into chambers and this acts as a pump, forcing the blood into the head cavity and from there it makes its way through the body among the muscles and viscera until it finds its way back into the pump.

Neither do insects have lungs and yet they require air to purify the blood, for life is essentially the same in them as in man. Therefore a modification in structure has occurred and the air is carried in flexible tubes to all parts of the body. These tubes go everywhere where the blood goes, and they open along the sides of the body—never on the head. An insect breathes, then, along the entire length of each side and there may be as many as twenty openings, although there are usually less. Ordinarily contact poisons act through these spiracles or breathing pores, though sometimes, on soft-bodied slugs we can use caustics. In the greenhouse, however, these caustics would be almost as dangerous to the plants as to the insects, hence the safer materials which act through the spiracles must be employed.

These may be soaps of various kinds, tobacco decoctions, oils, dry powders or gases, and each of these acts in a different way.

One of the simplest of the remedies usually employed is sulphur, either dry or in the shape of sulphur water. In either case the result is due to the decomposition of the sulphur producing a vapor which is deadly to insect life. Against creatures like the red mite or spider so often found on violets and other plants, dry sulphur spread on the soil and allowed to decompose slowly by the warmth and moisture often acts like a charm. Sulphur, indeed, is almost a specific against mites or simi-

lar minute spider-like creatures. The gases given off by its decomposition seem to be deadly to them. To the plants it is harmless unless used in unreasonable quantity. Exactly where the reasonable line ends is a question which the experience of the gardener must ascertain for each line of plants; but ordinarily there is no risk in sowing the sulphur so as to yellow the soil very perceptibly.

The sulphur acts only when the insects are in the active stage, and does not injure the eggs, hence infestation may continue for some time after the sulphur is applied, and so long as any unhatched eggs remain.

Against plant lice sulphur is of little use as compared with tobacco. Tobacco in all forms is a good thing. It is a fertilizer; the nicotine as it is gradually extracted by the moisture of the soil kills almost all insect life contained in it, and when vaporized it is death to plant lice. The mere smell of the tobacco while apparently unpleasant to many insects is not poisonous to them. But an extract in water so applied that the insects become covered is rapidly fatal. So tobacco smoke when breathed by insects is fatal to many, while it stupefies a yet greater number. I need not speak on this point to practical florists, all of whom have probably had experience in this direction.

A very good way to use tobacco where pipes are sufficiently hot is to smear them with a tobacco extract and moisten from time to time until it has all evaporated. This will penetrate everywhere and will settle on everything in almost invisible globules, killing all the aphides that come under its influence.

This leads naturally to another very important point that must be considered and whose neglect accounts for many failures. Most insects have the bodies either pubescent, very polished, or powdery or somewhat waxy on the surface, so that they shed water quite readily and any application of a coarse spray simply rolls off without effect. So also the spiracles or breathing pores are furnished with protecting screens of hair or bristles which serve to keep out foreign material. A large drop of water or watery decoction has not the least chance of penetrating through this protection and the application is useless as an insecticide. Use the same mixture with an atomizer and the result will be quite different. The minute globules adhere readily to the insect because they are not heavy enough to roll off; they penetrate between the protecting screen or under it, and enter the body with the in-breathing. Therefore when tobacco or any other watery mixture is to be applied it should be put on in as fine a spray as can be secured.

For cleaning house plants of all save scale insects a tobacco soap-suds put on with an atomizer, is almost perfect. This brings me to soaps as insecticides and they act in a somewhat different way. When put on very strong they are of course very caustic and as dangerous to plants as to insects. Put on at a strength safe to the plants they clog the spiracles and thus choke the insects to death.

Some of you in days gone by may have made soap-bubbles, and if you did not you have probably seen others make them. This is a good example of the tenacity of a soap film, and if such a one forms over the spiracles of an insect the creature simply chokes to death. That explains how soaps act and the one that forms the stickiest film is the best. Tar soaps, or fir-tree oil soaps are particu-

larly good for that reason, and fish-oil soaps come next. You can readily test the difference between these and the common hard soap-suds if you make a solution of equal strength. The common soap-suds will feel clean and smooth and crisp to the hand, while the others will feel more or less slimy. These soapy mixtures should also be put on in a fine spray and from what I have said you will realize that thoroughness is essential, for no insect not actually hit by an application will be in the least affected by it. Soap-suds have an advantage over more watery mixtures, because they adhere better. The insect surface that will shed a droplet of water will retain and become covered by one of soap-suds—hence a tobacco soap is better than a tobacco tea, though neither is equal to a tobacco smoke.

There is another point worthy of attention in the greenhouse. If soaps are to be used, those made with potash rather than with soda should be selected. Potash is a plant food and when washed into the soil acts as a fertilizer and is taken up and removed by the vegetable growth. Soda on the contrary in the form used in soaps is actually deleterious to the plants when present in any quantity, and a frequent use of suds made with a soda soap may easily impair the value of the soil for plant growth. In general, hard soaps are soda soaps, while soft soaps are potash soaps.

Dry powders are rarely used in the greenhouse, but whenever they are to be employed the reasons that call for a fine spray, call for the finest possible dust. The finer the dust, the more effective the application. Coarse particles are readily sifted out, but fine fragments penetrate and get into the body cavity where they can produce their characteristic effect.

Of the oils, kerosene only has been used to any extent, and this is a most valuable insecticide where its use is allowable. It is very effective even when greatly diluted, but it must be first emulsified before it can be mixed with water. This emulsion is prepared as follows:

Hard soap shaved fine,	½ pound.
Water,	1 gallon.
Kerosene,	2 gallons.

Dissolve the soap in boiling water and pour the kerosene, which should also be slightly warm into the boiling hot suds—churn rapidly with a force pump for a few minutes, and you will get a beautiful, snow-white butter which will keep in a cool place for weeks, and will dissolve readily in water to any extent.

Thus much for insecticides in general, and now a few words concerning a very few kinds of insects. Of course the same conditions that favor the growth of plants also favor the development of certain kinds of insects, and particularly plant lice or aphides, commonly called "greenfly" or "blackfly" according as they vary in color.

These are peculiar in several respects and particularly their mode of multiplication. Their appearance I will not undertake to describe, but if a single large individual be observed for a few days in succession, it will be noted that a colony of small specimens, daily increasing in size and number, forms round her and, as these attain full size in a few days they move off a little distance and in turn become centers of new colonies. If the watch be continuous and close, it may be observed that every few hours the mother of the colony gives birth to a living young and all her descendants are apt to be like herself, viviparous, par-

thenogenetic females. Some of them become winged, but that is not necessary to enable them to begin reproduction. Under greenhouse conditions no males are produced as a rule, and multiplication goes on with great rapidity. It is against such insects that the florist is most frequently called to battle, and besides the methods already mentioned, it may be in place to say that single plants may be often completely cleaned by the use of bisulphide of carbon. Bisulphide of carbon is a clear liquid like water which volatilizes rapidly, giving off an extremely foul odor which is poisonous to insects when confined in it. A dram is sufficient to poison one cubic foot of closed space, so as to kill plant lice without harming plants in one hour. In a closet constructed for the purpose, a number of plants might be placed at one time and completely cleaned, whenever such cleaning was desirable, as before sending to a customer. As the vapor is heavier than air and sinks, the bisulphide should be evaporated in a shallow dish secured in some way near the top of the closet. The objection to this material is its inflammability, but so long as this peculiarity is kept in mind it can be used with entire safety.

A somewhat similar process has of late been the subject of experiment in cleaning entire houses of insects by the use of hydrocyanic acid gas. This is secured by the action of dilute sulphuric acid on cyanide of potassium, and it is exceedingly poisonous to animal life of all kinds. The proportions are:

Fused cyanide of potassium,	
98 per cent. pure,	1 oz. weight.
Sulphuric acid,	1 oz. measure.
Water,	3 oz. measure.

Use a glazed earthenware vessel and put in first the necessary water, then add the acid; and when all is prepared drop in the cyanide in small lumps. The formation of gas begins at once and the amounts above given will thoroughly fill 100 cubic feet of space. Plant lice succumb in a few minutes, scales in from one-half to one hour—plants very soon thereafter. I do not know enough of the practical use of this gas to say much of its possibilities. I know that it has been used in some large houses; but I do not know the details. It is an exceedingly dangerous thing in careless hands, yet it may develop into a valuable method when we become better acquainted with its range and its possibilities.

Among the most troublesome greenhouse pests are scales; soft and armored. Soft scales are usually of considerable size; of the texture their name implies and brown in color. The young are smaller, much flatter and paler; usually quiescent, but capable of motion. In some species the young are produced alive, in some eggs are deposited under the female scales. Whichever is the case the florist must study the species until he knows when the young larvae are being produced. Then he should apply his washes promptly and thoroughly and at short intervals, for the larvae scales are easily killed, and once out of the way the plants will remain clean. Soap washes are best in this case, although tobacco will do it frequently used. The main point to be observed is the time when the young appear and prompt application as soon thereafter as possible.

The armored scales differ from the soft scales or lecaniums in that the scale is separate from the insect itself which lies free beneath it. The armored scales have no power of motion when they are once

fixed to the plant and their chance to travel is confined to a day or two just after they are born or hatched as the case may be. Treatment is much as already advised and is also effective in proportion to the promptness and thoroughness with which the application is made. No use to apply weak washes to mature scales.

Now it has been suggested that I should say something about the San Jose scale and about the attempts to legislate it out of existence. I am afraid that almost too much has been already said on the subject—enough at any rate to induce Germany to forbid the entrance of our fruit and living plants into her markets. Just how far this will be enforced, it is impossible to say at present, but perhaps far enough to make the unwisdom of the "scare" that has been caused, thoroughly apparent. That this insect is a destructive one if left to itself, is beyond question, and that we have not yet found the best method of dealing with it may also be admitted. I am firmly convinced, however, that legislation is not that best method, for laws do not enforce themselves, and if the energy displayed in securing legislation were devoted to experiments in the orchard, the result might be different. We know the life history of the insect now, thoroughly; we know that we can kill it if we are persistent, and as compared with some plant diseases it is almost harmless. In the very worst infested district in New Jersey the fire blight killed more trees last year than the scale has done in the ten years that it has been with us. In one of the best peach orchards in New Jersey the scale has been present ever since it was put out. None but careful horticultural treatment was given until the present winter and of more than 1,000 trees, not one has been in the least harmed by the scale. Plant disease cut off 10% of the orchard last year, and 20% of some varieties. Why not legislate against that?

Legislation has a place undoubtedly in our battle with insect foes, but it is rather to give us a weapon than to act itself. There are always some men who are behind the times or who are congenitally unable to comprehend that any one has rights that they are bound to respect. Such men occur among the farmers as well as elsewhere, and in some cases they maintain a veritable nuisance on their grounds in the form of insect infested plants from which adjoining lands become infested; such men should be compelled to look after their property to the extent of saving their neighbors, and legislation can help us to that point and no further. Of course, inspection of nurseries is a good thing in so far as it informs the nurseryman of the condition of his own affairs and he can make it, if he chooses, the basis of a guarantee to purchasers that his stock is clean. This will be of some tangible benefit to the purchaser if he is careful to deal with responsible firms, but as it is now, a certificate is a protection to a dishonest dealer since it gives him something to hide behind should his stock prove, later, to be either diseased or infested by insects.

It seems almost as if there was an epidemic of a new disease which may be called "certificatitis," sweeping through the country, and its most prominent symptom is a craving for a written formula which is expected to replace the necessity for personal care and examination.

It is admitted in the very latest expression from Mr. Alwood, who is one of the chief promoters of legislation, that a

certificate may be dishonestly affixed to stock or that an inspection may fail to discover infestation if it is slight. As a matter of fact, certificated stock has been received in New Jersey from three states this past winter, infested by the scale.

In such cases certificates are a positive source of danger, since the purchasers are apt to rely upon them too implicitly and to assume that they are a guarantee which obviates the necessity for personal care and inspection. Whether florists will ever suffer from this pernicious scale is a question. The insect infests almost everything. Its normal food plants are perhaps the tree forms of the rosaceae. But vines and shrubs, as roses, blackberry, raspberry and the like, are also infested, and roses particularly, are sources of danger.

LUCAS COUNTY HORTICULTURAL SOCIETY, WATERVILLE, O.—W. N. Farnsworth entertained this society on May 12. The principal essays of the day were by J. C. Harrison "Summer Cultivation," and by Mrs. Thomas Crofts, whose subject was "A Study on the Flower Garden." Discussions followed both papers.

SAN DIEGO COUNTY HORTICULTURAL SOCIETY, SAN DIEGO, CAL.—This society held its quarterly session on April 20. Poultry and lemons were the subjects discussed. The feature of the meeting was the description of methods of lemon pruning by A. C. Baronio, of Italy.

STARK COUNTY HORTICULTURAL SOCIETY CANTON, O.—Seventy-five members attended the meeting on April 18. Mr. Bitzer, of New Berlin, made an exhibit of apples and C. W. Faust exhibited forty varieties of carnations, roses and geraniums. There were the usual discussions.

SPRINGFIELD HORTICULTURAL SOCIETY, SPRINGFIELD, O.—At the meeting May 4 B. F. Brubaker was the host and seventy members dined at the long tables set in the big barn. The repast preceded the reading of the following essays: "Making Garden," Chase Colvin, South Charleston; "Increase of Wisdom," William Rapp, Terre Haute, O.; "Ye Society's History," Miss Lohrer. The society granted to its friends and members the privilege of offering premiums on any line of exhibits which they may choose.

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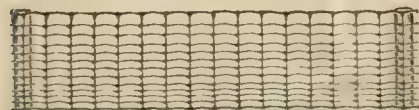
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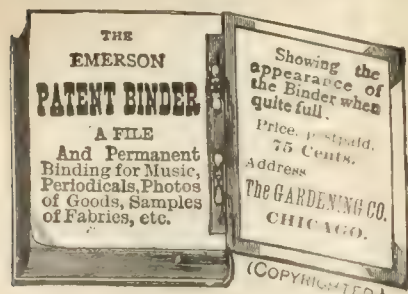


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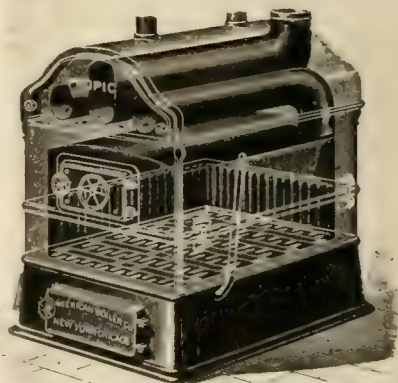
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No. 138.



TREE SCULPTURE IN JAPAN.

Trees and Shrubs.

JAPANESE TREE SCULPTURE.

Whatever may be our ideas regarding the artistic arrangement of cut flowers as practiced by the Japanese people at home, be it of the ancient school of Shin-no-hana or the more modern Ikenobo, we cannot commend their method of starving, twisting and torturing certain species of trees and shrubs. We may wonder at the patience exercised, the skill shown in perverting the natural tendencies of growth, and look upon the products as matters of curiosity. The accompanying illustra-

tion shows a specimen of Japanese handicraft in what may be termed tree sculpture, an art practiced by some who have to depend upon their children to perfect what they themselves commenced, perhaps in early life. This is more particularly true in the production of their dwarf evergreens, some of which are known to be over a hundred years old, and yet only two or three feet high, but bearing all the marks of old age. We presume that the artist who conceived this design had the form of a ship in his mind, and bent his energies toward forcing the growth to assume that shape. While the Japanese are undoubtedly expert at this style of contortion, their work of budding and grafting, especially their commercial

work, is not so perfect as that of European and American horticulturists.

Topiary work was at one time extensively practiced in England, almost every evergreen being clipped to some shape, even so far as to endeavor to represent the human form. Happily this craze has almost passed away. One of the most desirable forms of the topiary art is the maze. There are still some good examples of it in England, one of the best being located at Hampton Court, near London, and consists of a series of paths and hedges so intricate in arrangement as to render escape therefrom exceedingly difficult. Probably the best example of the maze in this country is at Hotel Del Monte, Monterey, Cal. W. C. EGAN.

SPECIMEN TREES AND SHRUBS.

In ornamental planting, almost all trees, shrubs and vines have their place. If not suited to stand out as specimens on their individual merits, they find their indispensable place in groups, which is the unit in all landscape work. So much by way of apology to the minor position of some of our beauties of nature. The specimen tree or shrub must have such a variety of merits in form of growth, color of foliage and bark or flower that enables it to assert its claim above all others in its peculiar attractiveness. The student of nature sees many things to please and charm not seen by the heedless observer. Indeed, he is almost overpowered by the variety, beauty and glory of the ornamental in nature. To illustrate, take *Fagus sylvatica*, the European beech, as a parent variety from which are derived *F. cristata*, crested beech, with its tufts of curled foliage; *F. heterophylla*, the fern-leaved beech, with its fine fern-like foliage; *F. laciniata*, cut-leaved beech, a tree of fine habit; *F. cuprea*, the copper beech; *P. purpurea Riversii*, Rivers' purple beech, the finest specimen of all purple-leaved trees; *F. var. tricolor*, purple-leaved, with vivid rose border; *F. var. pendula*, the weeping beech, a specimen tree of remarkable vagaries, but very impressive; and last of all but not least, *F. var. purpurea pendula*, the weeping purple-leaved beech, rare and beautiful, a specimen in its own right. If one species of tree furnishes so many varieties and so many specimens where shall we begin or end with our specimen varieties in ornamental planting.

Among the evergreens, remarkable specimens are found in each variety of that most essential growth in ornamental work for summer and, more especially, for winter scenery. Again it seems invidious to distinguish one beauty over an-

other, when each has its peculiar charm and use. As a specimen evergreen *Abies pungens*, the Colorado blue spruce, stands at the head, followed closely by *Abies concolor*, the Colorado blue fir, by some considered superior to the blue spruce. These specimens are so rare and in such demand it is somewhat difficult to obtain a first class one. The color is a rare and delicate sheen.

In the long list of arbor vitae are found some rare specimens, such as Peabody's Golden, twenty to twenty-five feet, one of the best for its rich and constant golden coloring; the Douglas Pyramidal Arbor Vitae, ten to twelve feet, foliage distinct and resembling a retinospora, very desirable as specimens in smaller lawns or in groups of deciduous shrubbery. But for specimens in smaller grounds, or grouping in more extensive ones, nothing excels the varieties of the *Retinospora*, or Japanese arbor vitae; *Ret. plumosa*, fifteen to twenty feet high and nearly as much in diameter, a mass of delicate glaucous plumy foliage; and a still more interesting specimen is *Ret. plumosa aurea*, a striking form, brilliantly golden throughout the season. We cannot omit mention of *Ret. filifera* and *Ret. filifera aurea*, the golden thread-branched, very distinct and lovely foliage. As a specimen variety the *Ret. squarrosa*, fifteen to twenty feet high, with steel blue colored and finely feathered foliage, excels all others of this most exquisite class of evergreens. These rare specimens are sold at very reasonable rates by some nurserymen, from one of whom I received a fine assortment of hardy varieties. They require a little protection during the severity of lake shore winters until they become acclimated and well rooted.

Returning to the deciduous trees, Wier's cut-leaved maple must not be overlooked as a rare and beautiful speci-

men tree of rapid and graceful growth; foliage deeply cut and of brilliant green color, upon long recurving and pendulous branches. Schuedler's Norway maple, purple leaved, must not be omitted from the specimen list of trees. It is twenty to thirty feet in height; foliage bright crimson in early spring, changing to a purplish green. The large nurseries can furnish this. It is valuable as a specimen tree, or grouped with other trees in parks, or planted as a street tree, as the writer has done in front of his Springdale home.

G. N. CARRUTHERS.

NUTTALL'S DOGWOOD.

We take pleasure in presenting a picture of this handsome western dogwood (*Cornus Nuttalli*), one among many on the beautiful grounds of Mrs. C. E. Ladd, Portland, Oregon. To those who have seen only our eastern form (*Cornus florida*), it may be of interest to state that this one was photographed from the third story of the residence, which fact enables one to form some opinion of its height. This species is indigenous to the Pacific Coast from Monterey, California, northward to the Frazer river, being a small tree in some localities, but reaching height of fifty to seventy feet under favorable circumstances. It resembles the eastern form quite closely, and although considered a separate species by Audubon, who gave it a specific name, the late A. S. Fuller in his "Practical Forestry" states that it may be only a western variety of the eastern flowering dogwood. Its fruit is a little larger than that of the latter. As is generally known, what are casually considered the flowers of the *Cornus florida* and this species also, are merely the bracts. The flowers proper of the eastern dogwood are small, greenish white, and only noticeable upon close observa-



CORNUS NUTTALLI.



THE MAZE AT HOTEL DEL MONTE, MONTEREY, CALIFORNIA.

tion. They are surrounded by four large white bracts, which produce a white snowy effect when seen from a distance. The involucre of *Cornus Nuttalli* is composed of from four to six oblong bracts often three inches long, generally white sometimes tinged with red. The same but tone of coloring is present in the eastern form and in one instance the "tinge of red" became so intensified and fixed that we now have a red flowering dogwood, as well as the white.

THE EUROPEAN LINDEN.

A very attractive tree on the campus of Cornell University at the present time is the European linden, *Tilia Europea*. A few specimens also may be noticed in the streets of Ithaca, where they are equally conspicuous. Its trim and natty oval shaped head is well known and does not differ materially when young from the American type, except that it is somewhat closer headed; but it was of the basswood in blossom that I wished to speak. The European species is now in full bloom and is indeed handsome, draped with its covering of light yellow flower clusters. The flowers persist for twelve or fifteen days. They are not deliciously scented like the American, but more delicate and beautiful to the eye. Having said this one feels that he has done full justice to the European linden which in my opinion is inferior to the American for economic as well as ornamental purposes.

JOHN CRAIG.

Ithaca, N. Y.

MISSOURI STATE HORTICULTURAL SOCIETY.—West Plains, Mo., will be the scene of the annual summer meeting June 7, 8 and 9. An elaborate program has been prepared and premiums will be offered for exhibits of both fruits and flowers. An especial effort has been made to cause the meeting to be of practical value and a large attendance is expected.

A CALIFORNIA MAZE.

The illustration on this page shows the entrance to the maze at the Hotel del Monte, Monterey, California. It is an intricate complication of puzzle paths, in which visitors take a pleasure in being mystified. The hedges and other topiary effects are 'sculptured' out of *Cupressus Macrocarpa*, better known as the Monterey cypress. This conifer is rather remarkable for the number and variety of its uses in horticulture. It grows rapidly and makes an excellent windbreak when planted in rows or clumps. Its graceful habit also makes it a desirable lawn tree when given ample space to develop. Taking a couple of seedlings from the same box, one can be planted as a hedge plant and trimmed to remain a hedge plant for probably a century, while the other, if planted in an unconfined space, will attain a height of fifty to sixty feet in twenty years.

W.

ORNAMENTAL HARDY VINES.

Among hardy vines varieties of clematis hold a prominent place. The large flowered ones of the *Jackmanni* type are much admired for their large and beautiful flowers, existing as they do in so many colors. Some of them flower occasionally throughout the season, in addition to the full display they make in June. But it is to the smaller flowered ones of the *flamula* and *vitalba* type that we look for the most rapid growth. When quick covering and light shade is required such sorts as the two named, with *paniculata* and *Virginiana* added, are the best for the purpose.

The English ivy is quite hardy in this state, contrary to the general belief. But from some cause unexplained it fails to cling nicely to plastered walls. It may be that the heat of such walls prevents the rootlets taking hold firmly. On brick walls it appears to catch hold very well. This is the only good evergreen hardy

climber for this section, and, so far as its power to stand our winters is concerned, there need be no fear of it even further north than this, especially when planted on the north or east side of a building. Trumpet vines are coarse growing, but there are buildings where their presence would be desirable, and they are valuable for their large scarlet flowers in midsummer. For climbing up old trees or covering logs and such objects, they are very desirable, as they are self-climbers like the ivy.

For a good, handy, crimson flowered climbing rose nothing exceeds in usefulness the Boursault. Then, too, it is almost thornless, and like the *Prairie Queen*, Baltimore Belle, and nearly all others, it flowers but the once, in June. Where winters are no more severe than they are with us, the lovely tea rose, Gloire de Dijon, is available. It is entirely hardy here. It flowers in the utmost profusion from June till frost, the blossoms varying in color from flesh to rosy cream.

The Japanese vine, *Akebia quintata*, is not nearly as well known as it should be. While of slender graceful growth, it is as hardy as can be, a rapid grower, has beautiful foliage and sweet-scented, plum colored flowers, which appear almost with the first new leaves in spring. It is one of the very best vines for porches and situations near a dwelling, where a coarse vine would be out of place. The Japanese ivy, *Ampelopsis Veitchii*, is the one vine of all for the walls of a dwelling. Close growing, neat, pretty green foliage all summer, which changes to a scarlet color in the fall, no other vine can take its place. Our native ampelopsis, the Virginia creeper, is too coarse for dwellings, but for garden walls and such like places there is nothing better, and like the preceding one, it colors brightly in autumn.

A native vine, *Celastrus scandens*, called staff vine and bitter sweet, has

been written about a good deal, because of its bright red berries in fall and winter. Its chief use is for planting in situations where it can ramble at will over other shrubs and trees. In such places it makes a good display in early winter. There is a foreign species of it, *Celastrus punctatus*, which flowers and fruits more freely than ours does.

Dolichos japonicus is a Japanese vine about which much has been written of late, chiefly because of its being such a rapid growing vine. But it is of a partly herbaceous nature, the tops dying back in winter to almost the color of the plant. This, however, does not prevent its making a wonderful growth every season, sometimes as much as fifty feet in a season, when the vine is old and strong. It must be tied to what it has to cover, as it does not cling of its own accord. It bears rosy purple flowers, in small racemes.

Wistarias are well known, useful vines. There are four good, distinct sorts, the Chinese, American, Japanese and *magnifica*. For situations where a rather heavy vine is wanted, this is the one to have, and the Chinese is the showiest. The flowers are in drooping bunches, much like huge bunches of grapes, and are sweet scented. The Chinese flowers first, closely followed by the Japanese, the others coming two weeks later. They are often used about porches, but unless where the situation demands a large, strong vine, with large woody shoots, they are apt to look too heavy for the place.

JOSEPH MEEHAN.

Philadelphia.

The Flower Garden.

THE PICKEREL PLANT.

One of the plants which adds much to the beauty of the inland lakes, so numerous in the highlands of south-east Michigan is the pickerel plant (*Pontederia cordata*). Usually it grows in water six inches to one foot deep, in the shallow borders of rivers and lakes. Many of these plants, growing thickly together form large masses not only ornamental in appearance but an ideal resort for that small fish called the pickerel, hence the name, pickerel plant, or, rather inappropriately, pickerel weed, for it is in no sense to be called a weed. This plant grows three or four feet high, bearing two or three large, handsome, calla-like leaves and at the summit of the stem a long spike of handsome, oddly shaped blue flowers, in perfection in July. Approaching an inland lake or river in July, we see in the distance, along the margins a border of deep green above which lies a line of rich blue. It is a very useful plant in water gardening.

W. A. B.

HERBACEOUS PLANT NOTES.

The month of May brings out a great number of showy hardy flowers and the borders are becoming more interesting every day. Where mixed borders have been planted judiciously, spring bloomers evenly distributed among the summer and fall flowering subjects, there will be no lack of cheerful and lively effects from now on. The early flowering material to draw upon is so very large that any soil, situation or exposure may be suited by proper selection. High dry ground can be made a success as well as the low damp places, and between the two ex-

tremes we may plant almost anything without discrimination, though some of the plants will require the protecting shade of their taller neighbors in mid-summer, and therefore a knowledge of their special requirements is indispensable, for if we should place the helianthemums, for instance, in a shady nook we could not reasonably expect them to bloom with the same profusion, nor would their growth be so compact as when planted in a fully exposed position.

Among the many things in bloom at present I may mention the grand *Doronicum plantagineum excelsum* with its large well formed daisy-like yellow flowers; it is a most profuse bloomer and lasts for a long time, often maturing another fair crop of flowers toward or late in the fall. This is the tallest of the doronicums to my knowledge; under favorable conditions old clumps may attain a height of three and a half to four and a half feet, but in ordinarily good soil we seldom see them more than three feet high. *Daphne cneorum* is fully out with its numerous bright pink flower heads, which are delicately fragrant; it does not really come under the head of herbaceous plants, being hard wooded and shrubby, but is in general use in all borders of any pretension. The plants spread out, but never grow tall with age. Propagation is effected by cuttings of the half ripe wood or by layers; it is slow work at best unless you have numerous large old stools to work from. The plants furnish a full crop of flowers regularly every spring and early summer and then bloom off and on, but more sparingly, up to late in autumn. *Viola cornuta* has started to blossom quite profusely. The blue varieties are used in many sections in place of violets when the latter are past, and though the flowers of the horned violet are a trifle larger than the best of our single large flowering sorts, and more pansy-like in shape, they answer admirably for the purpose. When planted in slightly moist ground and partly shaded from the hottest sun, we may pick flowers from them continuously until fall, but in a dry and very sunny exposure they will stop blooming during the hot weather in July and August. The pure white variety is equally desirable, and all are excellent plants for the border when slight shade can be provided for them, otherwise they are only effective in the early part of the summer and again in autumn.

The various kinds of trollius are very conspicuous at present with their bold globular yellow flowers. *T. europæus* is pale yellow and the stems generally grow about one and a half feet high in ordinary garden soil; the flowers are very lasting. The plant is well worth growing for cutting, as also is the deeper colored *T. asiaticus*, which in other respects resembles the first named. A variety which we received from a European grower some time ago under the name of *T. giganteus* has larger flowers and is a vigorous grower. The earliest lychnis with us is the elegant *L. alpina*, only about six to eight inches high, but well set with a great number of its many flowered bright pink flower heads. This useful plant is not met with very often, though easy to grow in dry and sunny places, while moisture and dense shade is detrimental to its welfare. It forms a nice little compact tuft of small narrow foliage and is evergreen; the flowers will last well into summer and the plant looks neat and clean throughout the year. *Linum perenne* is coming on fast; its lovely blue saucer-shaped flowers are very numerous every morning, but they close

up after midday or when it rains, only to reopen again in the same profusion the following day. Its habit is graceful, light and airy, stems thin and wiry with narrow short linear leaves; the flowers are of no use for cutting, but no flower border should be without a few of these plants; they are always satisfactory and require no special care, doing well in any position if not too densely shaded, attaining a height of about one foot.

Stellaria Holostea, with a profusion of starry pure white flowers is conspicuous on the rockery and in the border; its densely matted growth hides the ground at all times and the flowers are freely produced in succession for about two months in spring. Armerias in a half dozen varieties are out too, mostly pink shades, a few whites among them; we can ill afford to do without any of them, for all have distinct and desirable qualities of their own. *Iris pumila alba*, with pure white standards, and *I. pumila aurea* are somewhat later with us than the blue varieties, but are well advanced now; both are valuable in the border, especially the last named, the color being a very deep golden yellow and the flowers perfectly shaped; growing a little taller than the early blue, they are used extensively as cut flowers. *Uvularia grandiflora* with its long pendulous pale yellow flowers, which are kept in constant motion by the slightest breeze, is an interesting object when planted in large clumps; young plants with two or three stems are pretty, but do not create the same effect. These flowers are borne on the stout arching shoots and spring from the leaf joints on the upper part of the leafy young growth. Half shade is desirable for them, but open places will answer for them if the soil is not excessively dry. The rock roses (helianthemums) are just now beginning to be attractive and will be so throughout the season; every day will bring a new crop of the small rose-like blossoms, white, yellow or pink, in various shades. The plant is shrubby, but very dwarf in habit and can withstand the dry heat in full exposure; the small foliage is green in winter and helps to keep up a cheerful appearance in the border or on the rockery, wherever we may happen to introduce them. They are propagated by cuttings in August.

The double white *Ranunculus aconitifolius* fl. pl. is one of the most useful plants of its genus for cutting, though the double yellows are also very serviceable. They are double to the very center and bloom freely in May and June on long branching stems, varying in height according to soil or situation from ten inches to two feet. The plants should not be disturbed too often, old clumps in fairly good soil giving a great mass of bloom year after year and growing to a good height, the flower stems being long, while newly divided plants are a great deal shorter of stem. Fair maids of France and white bachelor buttons, they are called in different sections of the country. The double buttercup or yellow bachelor's button, *R. acris* fl. pl., is also in flower; it grows usually about one and a half feet high and is not so sensitive when divided and transplanted. All ranunculuses, of which there are quite a number of species, do best in rather moist soil, but an ordinary border will answer quite well for them.

J. B. KELLER.

An English paper reports a case of free-sia bulbs forming new bulbs after planting without producing any foliage.

ORNAMENTAL BEDDING.

PART IV.

For construction of a square we use the sides and for control the diagonals. Suppose we lay out an eight foot square, Fig. 12.

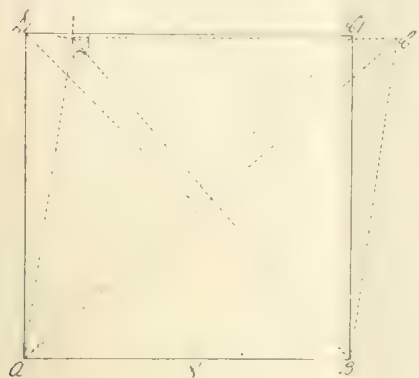


Fig. 12.

First get the base *a-b* eight feet long and set pegs; from one of these *b* for instance, measure eight feet out about square on the base and set a peg, *c*, with a radius of eight feet "shoot" *d* from *a* and *c* and put a peg there, now tie a piece of twine from *a* to *d*, from *d* to *c* and from *c* to *b*; measure the diagonals *a-c* and *b-d*, and unless you have been very lucky, one is longer than the other. Take up pegs *c*

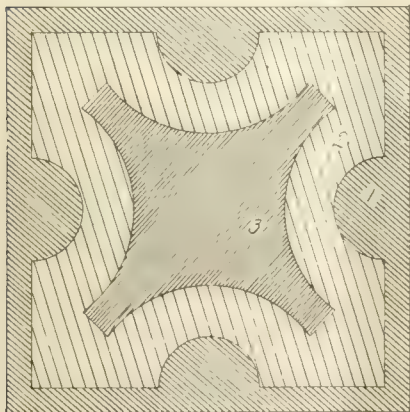


Fig. 13.

and *d* move them a little in the direction of the shorter diagonal, set them in the ground again with the twine stretched, measure the diagonals and if not yet alike, proceed as before until you have

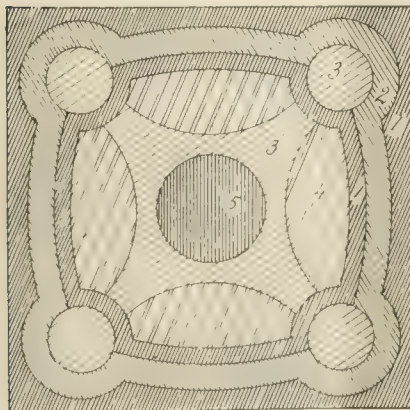


Fig. 14—An eleven-foot square.

them equal. This is a way I have found easy and practical, but the same result can be had in many different ways.

Some good designs for squares are as follows:

Fig. 13. 1, *Alternanthera amœna spectabilis*; 2, *Coleus Golden Bedder*; 3, *C. Verschaffeltii*.

Fig. 14. 1, *Alternanthera Reevesii*; 2, *Mesembryanthemum cordifolium variegatum*; 3, *Santolina incana*; 4, *Alternanthera aurea nana*; 5, *Achyranthes Lindenii*.

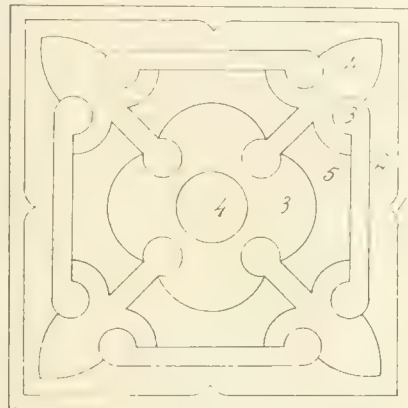


Fig. 15—A twelve-foot square.

Fig. 15. 1, *Alternanthera paronychioides major*; 2, *Mentha Gibraltaria*; 3, *Alternanthera amœna spectabilis*; 4, *Santolina incana*; 5, *Alternanthera aurea nana*.
H. HANSEN.

The Greenhouse.

NOTES ON NEW CARNATIONS.

I spent a pleasant hour, a few days ago with Mr. Peter Fisher, of Norwood, Mass. Having seen his new carnation, Mrs. Lawson, in its prime, I wanted to see it again at the end of the season. Considerably stripped for stock, it is remarkable how it holds out, a perpetual bloomer with Malmaison proportions. Though not generally known, it is a cross between Daybreak and Van Leeuwen, which latter will be remembered as resembling Tidal Wave, and belonged to the European type of perpetual. Experts know Mrs. Lawson well; to others we would describe it as a salmon tinted, rose pink. Three thousand flowers were gathered from five hundred plants during the month of March.

Klondike is not so large but is better in form and color than Mayor Pingree. It is early, productive, with a well built flower, a good stem and tolerably free from rust. No yellow as yet, rank with Eldorado when well grown. Klondike is a cross of Edith Foster and Thos. Cartledge. All Mr. Fisher's yellows have had Cartledge as part parent. This same cross produced Morning Star, a new white now under a second year's test. This is not an exhibition variety, though commercially among the most profitable. Fragrance, form, productiveness and purity of color are all that could be desired, the flower lacking only size. Freedom improves every season. It is distinctly perpetual, early, large, and fully justifies its name. When well grown, there are few poor flowers. Mrs. Bratt is considered an acquisition among striped varieties, and here as elsewhere it has

shown a red sport. This sport, I am told, is not reliably constant. Freedom has been crossed by Mrs. Bratt, giving two-thirds purple and one-half single flowers, none worth keeping. My seedlings of the reverse cross, to bloom this season, will be watched with interest. Nicholson's Camp Fire is productive and easy to manage, but not quite up to the standard among scarlets. Mr. Fisher's comparison between Bon Ton and Wellesley is decidedly in favor of the latter.

Among coming novelties much is expected of The Maine, an improved Mrs. Lawson. I can imagine the experts saying: "One at a time, please." Here is also an improved Wm. Scott, named Alice. In habit there is no difference, and the variation can only be seen when two flowers are placed together. The purple tint unnoticeable in Scott alone is seen at once on comparison. There is also a new Daybreak from Mrs. Lawson, and an improved Morning Star. This latter is not a seedling from Lawson. T. D. H.

THE RUST OF THE CHRYSANTHEMUM.

Some days ago while on a visit to a large floral establishment my eye fell upon the chrysanthemum rust again, and it seems wise to give this new pest in America a notice. This fungus disease is closely related to some others that have proved very troublesome among greenhouse and ornamental plants and it may spread and be as serious to chrysanthemum growers as the carnation rust has been to the propagators of the carnation.

The accompanying engraving will give a fair idea of the appearance of the dis-



CHRYSANTHEMUM RUST.

eased leaves. The two specimens are somewhat reduced in size and therefore the rust pimples are smaller than usually seen. Frequently the spots are in clusters, there being several arched ones around a common center. The color is a chestnut brown, and therefore much darker than the closely related rust that has brought ruin to the hollyhocks in many localities within the past few years.

The spore spots appear upon both sides of the leaves but as a rule are much more abundant upon the under side, and therefore the foliage needs to be lifted before the observer gets a full view of the spore formation. The writer has not as

yet been able to find the last stage of spore formation and therefore there is doubt as to the botanical name of the rust. On this account those who have the rust will confer a favor by sending to the undersigned a leaf or two from a rusted chrysanthemum. It will also help to give a knowledge of the range of the plant at the present time in the United States.

The rust is very likely an old weed and well known species and may have come in with imported stock or possibly infests wild plants in our own country and those growers of chrysanthemums who are suffering from it may have wild plants, even weeds, at their very doors that harbor and propagate the greenhouse pest. Those who have their chrysanthemums rusted should use all the precautions needed with a disease that is contagious and may be carried in the stock.

It is a good rule to propagate only from stock apparently free from the rust and be watchful in buying not to introduce the disease into a house that was before free from it. It would be interesting botanically and of value commercially to learn of some varieties of chrysanthemums that are more or less susceptible than others.

BYRON D. HALSTED.

New Brunswick, N. J.

New and Rare Plants.

HARDY AND GREENHOUSE NOVELTIES.

DRABA BRUNNIFOLIA.

We have in this a very nice dwarf plant about one inch high, which is well adapted for borders. The bright yellow flowers, three-eighths of an inch in diameter, appear in such large quantities that almost nothing of the leaves is to be seen when the plants are in full bloom. The single flower lasts, as I observed, more than one week. The flowers appear in April. The perennial plants are raised from seed, which should be sown in June, and the plants will then bloom next spring for the first time. The plant is also adapted for rockeries.



LEEAE ROEHRSIANA.



ACALYPHA GODSEFFIANA

ERANTHIS CILICICUS.

This fine tuberous plant flowered in January in the open air. It attains a height of about four inches. Large tubers often produce twenty or thirty flowers at once. The flowers are best compared with those of *Helleborus niger*, but they are a little smaller, bright yellow and delightfully fragrant. Immediately beneath the single-stemmed flower there is a fine rosette of three deeply incised leaves, which are somewhat recurved, while the flowers are more or less bell-shaped. They are fully expanded only when the sun shines. The plant is nearly allied to *Eranthis hyemalis*, from which it differs by larger flowers and finer incised leaves. It was brought into commerce last year by Mr. Siche, at Mersina, in Asiatic Turkey.

ANTHURIUM GUSTAVI.

This is far the most majestic of the anthuriums, as the leaves measure more than three feet in diameter in both directions. It grows best in a damp house in turfy loam, where it forms leaf after leaf at short intervals. But it is also grown easily in a much cooler temperature, and is a very decorative indoor plant. I have it without any protection in my room for more than a year, where it grows very satisfactorily, though the leaves do not

attain their full size. The plant is propagated by cuttings, which will be easily obtained if the head of the plant is cut off.

STERNBERGIA MACRANTHA.

Mr. Siehe has given us in this recent introduction another new plant of the highest value for cut flower purposes. It is quite hardy, and the flowers appear from the end of October until New Year's. They are as large as those of a good tulip, but of a shining yellow color. Cut flowers remain quite fresh, without water, for five days. The bulbous plant requires a very well drained soil, and to obtain flowers for cutting purposes should be grown in frames, for it is necessary that the plant be kept quite dry, without any water, and fully exposed to sunshine during summer. The plant is quite hardy. The allied *Sternbergia lutea* has flowers of only half the size of this plant. UDO DAMMER.

ACALYPHA SANDERI.

This was one of the most sensational exhibits at the recent Ghent, Belgium, quinquennial exhibition. It is described by Dr. Masters as one of the most striking and ornamental plants he had ever seen. Of branching habit, the branches spread widely and throw down long, bright crimson spikes like those of love lies bleeding, twelve to eighteen inches in length, beneath broad ovate leaves, in a most effective manner. To see a group of these plants at Messrs. Sander's, where one can look up at these crimson tassels, is to experience a sense of enjoyment not to be forgotten. This plant was collected by Micholitz in the Bismark Archipelago.

LEEAE ROEHRSIANA.

This is one of the finest plants of the genus, and will make an excellent addition to the group of trailing plants. The plant has been named in honor of Mr. J. Roehrs, Rutherford, N. J. Dr. Masters describes it as a tropical climber with pinnate foliage sixteen inches long; each pinna very shortly stalked, six and one-half inches long and two and one-half inches wide, glaucous, cordate, oblong, acuminate and coarsely crenate. The young leaves are bronze green, and the stem is marked with raised green spots. This plant is allied to *cissus*, and is found in the hotter parts of India, Malay and Philippine islands and Australia; not only has it this wide distribution, but it is exceedingly variable and therefore plentifully endowed with synonyms, of which *L. Roehrsiana*, Hort., Sander, is one. It is easy of propagation and rapidly attains vigorous proportions. Small plants bloom more easily, and in bush form it is useful for decorative purposes and cannot be equalled. As a climber its spikes are very attractive, lasting several weeks in a fresh condition. The foliage is of clear, shining green, and the spikes bright crimson.

ACALYPHA GODSEFFIANA.

The beautiful variegated foliage of this plant will make it exceedingly popular. The coloring in small plants is very marked. Specimens will prove invaluable for decorative purposes. According to Dr. Masters it is a low growing shrub of dense, bushy habit, with shortly stalked, ovate or ovate-lanceolate leaves, slightly cordate, acuminate, coarsely toothed, teeth incurved; disk three and one-half to four inches long, two and one-quarter to two and one-half inches wide, green, with a few thinly scattered, rather long white hairs on the upper surface and along the cream-colored or white margins; petiole three-quarter of an inch long, densely

covered with felted seta. Flowers and fruit not seen. The cream colored marginal variegation gives this plant a very ornamental appearance. Although the flowers are not known, there can be little doubt as to the affinities of this plant, and indeed, there is in the Kew herbarium a specimen which may be the green form of this species. This has been referred with doubt to *A. Pancheriana*, of Baillon, from which, however, it differs widely as also form *A. obovata*, which has retuse, red-edged leaves. Our present plant, which appears to be very ornamental, was collected in New Guinea by Micholitz.

A. DIMMOCK.

SOME PRINCIPLES IN DELAWARE APPLE CULTURE.—By G. Harold Powell.—Delaware Agricultural Experiment Station, Newark, Del., 1898.—Apple culture in Delaware has not been a success, and the entire question is discussed by Prof. Powell in this bulletin in a thoroughly able and exhaustive manner. Failure is attributed to the planting of varieties not adapted to the climate and to the neglect of the trees and orchard lands. Similar causes have had evil results elsewhere, and it is held as almost certain that the apple industry will thrive in Delaware under proper conditions. The soil and climate of this state are as suitable for such work as those of many

other sections in which apples, under skillful treatment, produce abundant crops. The few Delaware orchards under good management clearly demonstrate that the soil and climate are not at fault. "Northern winter apples," the writer tells us, "ripen in the fall in Delaware; they rot and drop to the ground; they are poor shippers, and there is no demand for the old winter kinds in early fall." These old varieties must be cleared out, giving place to others better qualified to meet the public demand. Prof. Powell names the following varieties as the most promising for Delaware: Summer—Yellow Transparent, Astrachan, Fourth of July, Nyack Pippin, Gravenstein, Fanny and Jefferis. Fall—Maryland Maiden's Blush, Grimes' Golden Pippin, Rome Beauty, Lily of Kent, Lankford and Jonathan. Winter—York Imperial, Stark, Paragon, Winesap, Arkansas or Mammoth Black Twig, Stayman's Winesap, Jackson and Missouri Pippin. It should not be forgotten, however, that selection will count for little unless cultivation, manuring, spraying and pruning are pursued with intelligence and assiduity.

REDLANDS HORTICULTURAL CLUB, REDLANDS, CAL.—Prof. S. M. Woodbridge read an essay on fertilizers for orange culture at the May meeting and Prof. William Stowe Devol discussed "Dates and Date Growing."



ACALYPHA SANDERI.

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THE twenty-third annual convention of the American Association of Nurserymen will be held next week, June 8 and 9, at Omaha.

HEWITT CHAPMAN, who represents large horticultural interests in Louisiana, is in California to study orange culture for the Bradish Johnson Company.

THE tree pæony, Riene Elizabeth, is worthy of a place in any garden. Its large, very double pink flowers, measuring over seven inches in diameter are very handsome.

THE Royal Horticultural Society of England has awarded Messrs. Paul & Son, Cheshunt, a certificate for a double flowered form of the well known hardy perennial, *Alyssum saxatile*.

TILL and work your flower beds and around newly planted shrubs and trees; this treatment is as good as a watering. Weeds are a blessing, because they compel us to stir up the soil.

WATCH your clematis, and in fact all rapid growing vines, and tie them up promptly. Some are quite brittle and object to being straightened out when once they have grown in a crooked form.

JOHN P. SORENSEN, fruit tree inspector for the county of Salt Lake, Utah, has written an open letter advising all fruit tree owners to spray all trees immediately. Mr. Sorensen believes that spraying is the best means of disposing of worms and

that the exigencies of trade demand that no risks be taken but the pests be disposed of before the fruit is developed.

FUMIGATING with hydrocyanic gas in the cellar after nursery stock is dug in the fall is recommended in a recent bulletin of the New York Experiment Station. This will probably destroy all insects.

C. H. EVERETT, of Beloit, has been chosen secretary of Wisconsin State Board of Horticulture in place of M. R. Doyon, resigned. The board is making extensive preparations for the approaching fair.

THE horticultural department of the Michigan Agricultural College has sent out 2000 young fruit trees to secretaries of institutes and county societies. They are Russian varieties not heretofore tested in this country.

EXAMINE your plants of euonymus and notice if the leaves are curled up; if they are, it is caused by numerous small black lice. Soak tobacco stems over night in water; syringe the foliage twice a day for a few days with this tobacco water and you will get rid of the insects.

A COMMITTEE representing the Michigan University and State Agricultural College is striving to secure the adoption of a forestry policy which shall effectively protect the fast diminishing forests of the state. Prof. V. M. Spalding, of the U. of M., is chairman of the committee.

HAVE you noticed how closely the flowers of the dandelion lie to the ground when they hear the click of the lawn mower, and how straight up in the air the stems stand when the seed is ripe? This is a provision whereby the seed heads are elevated to catch the breezes that will waft them over to your neighbor's pet lawn in exchange for some he gave you last year.

W. H. BROWN, fruit tree inspector for the state of Washington, has given out information as to the extent of the damage done by the saw-fly and bark louse. At Stein's Sunnysdale orchard, near Seattle, Inspector Brown found rows of trees and bushes stripped bare of foliage. He recommends spraying with arsenicals for the saw-fly and an emulsion of kerosene and soap to destroy the scale.

AN open competitive examination will be held at various cities in New York on June 18 for candidates for the position of inspector of nurseries and orchards. Three officers are to be appointed at \$100 a month, their duty being the suppression of yellows, black knot, San Jose scale and other diseases and pests. Applicants are to be examined as to experience, practical and scientific knowledge.

IF you have been growing tulips in your canna beds, which is the proper thing to do, so as to have no bare ground staring you in the face, and the time comes to plant out the latter, remove your tulips, foliage and all, to some spare ground and heel them in carefully, letting them remain until the foliage ripens off. This is essential for the proper development of the newly formed bulbs.

THERE is now pending in congress a bill to authorize and encourage the holding of a National Exposition of American Products and Manufactures, especially suited for export, at Philadelphia in 1899. The exposition is to be held under the auspices of the Philadelphia Commercial Museum, a public institution, and is a matter of deep interest to manufacturers, agriculturists, horticulturists and florists,

as it will teach American producers the requirements of the markets of the world and at the same time do much to acquaint foreign buyers with the superiority of American products.

THE effect of the sun shining through the young leaves of the tri-colored beech is charming. This tree is a variety of the purple forms of the European beech, *Fagus sylvatica*, in which the margins of the leaves are bordered with a distinct rose color. Later in the season it loses some of its brilliancy. The effect of the sun seen through Rivers' purple beech is also fine, but it is only when the leafage is young and tender. This beech stands the hot sun and is probably the finest dark-leaved tree in cultivation.

ORIGINATING NEW VEGETABLES.

At a recent meeting of the Massachusetts Horticultural Society the Hon. Aaron Low, of Hingham, delivered the following eminently practical address:

In coming before you to speak on this subject, I take it for granted that you wish it treated in a practical manner, so that every one present can apply the suggestions and ideas advanced to his own operations on the farm or in the garden. Every market gardener often notices a variation among vegetables of apparently the same variety. One of the first principles of nature is reproduction and the production of new varieties by cross-fertilization or hybridization. The improved varieties introduced during the last twenty years have been obtained by these two methods. The searchers after new varieties should bear in mind that a sport which appears to be an entirely distinct variety will require years of careful and intelligent training to establish its points of variation and excellence.

To establish a cross as a distinct variety we should have in our mind an ideal as to form and the more prominent characteristics we desire our new variety to attain, and, selecting samples that come nearest to the desired points for seed stock, persistently follow on that line until our object is accomplished. New varieties, although apparently well established, are apt to sport back to one of the original kinds from which the cross was obtained, and they require careful watching for years to eliminate such points as appear undesirable. As every year brings forward new kinds of vegetables, the up-to-date market gardener must keep himself well posted as to the merits of such varieties and their adaptability to his requirements.

For a general farm product there is no one of more importance than the potato. Its early history is involved in obscurity. It was introduced into Europe some time in the latter part of the sixteenth century. A long time before it was used as a food by the masses, and as late as the beginning of the eighteenth century, it was pronounced, by a college of physicians in France, poisonous and unfit for human food. It seems strange to us that it should have taken so long to discover its merits as an article of food, which at the present time is deemed indispensable for daily use upon the tables of the rich and poor alike. We propagate the potato by slips of the tubers, and if we wish to produce a new variety we must take the natural seed balls. It is a well known fact that the varieties of potatoes now in cultivation very seldom produce seed balls, therefore we must plant the kinds that produce them. The seed balls should be gathered when ripe, the seed cleaned from the pulp, dried and preserved til

spring, then planted in a bed prepared for that purpose, giving close and careful cultivation. The first year small, poor looking potatoes result. The second year we find a great variety in form and color. From three to five years are required to develop these seedling potatoes. As the tendency of potatoes after a few years of cultivation is to deteriorate, it becomes necessary to have new varieties to take their place. Most of the kinds cultivated twenty years ago are now superseded by recent varieties. The introduction of the Early Rose marked a new era in potato culture. Recent introductions of value are New Queen, Early Essex, Carman No. 1, Carman No. 3, Banner, Somerset and Enormous.

Early varieties of potatoes are desirable to escape the beetle and the blight. Two other advantages in an early crop are that the price of potatoes is much higher than later in the season, and the land can be used for a second crop of celery or late cabbage. I also plant squashes every third row, and get about as large a yield as if no other crop had preceded it.

As a vegetable second in importance to the potato we may reckon the cabbage. New varieties can be produced by cross-fertilization, either by transferring the pollen from one kind to the other with a camel's hair brush or setting two kinds side by side, when the bees or the wind will make many crosses by carrying the pollen from one to the other. Varieties can be greatly improved by careful selection of the best type of heads for seed, and continuing thus for a number of years the grower will find much improvement on the original variety. European cabbages are imported to this country and bring a high price. Two European varieties which I have grown with best success are Amager and Solid Emperor.

Every market gardener needs to plant early and late squashes. The best early variety is the Marrow; the best strains are the Boston Morrow and Dunlap's Prolific. In passing over a field of American Turban squashes in 1879, I found a vine with a number of handsome squashes; from their form, color and hardness of shell they seemed to be a cross between the Turbans and Hubbards growing in a field near by. This accidental cross was trained to retain the hard shell, delicious flavor and sweetness of the Hubbard and the form and golden color of the Turban, and was introduced under the name of Essex Hybrid.

I have every reason to believe that the Bay State squash is simply a sport backward, so to speak, showing a stronger and more marked development of its Hubbard parentage. When first found it was growing in a field of pure Essex Hybrid squashes, without a single Hubbard squash having grown in the vicinity for a number of years. It is a singular fact that the original plant of both the Essex Hybrid and the Bay State had each three squashes growing on the vine within the length of three or four feet, and almost identical in form and size, the only apparent variation being the color. The color of the Bay State was distinct from every other squash then known, being a blue shade with a peculiar greenish tinge. As a late winter squash the Hubbard takes the front rank.

I think that in the entire list of cultivated vegetables, there is no other family so hard to preserve in its purity as the *Cucurbitaceæ*. From the peculiar formation of the blossoms they are not readily fertilized by the wind. To remedy this defect nature has furnished another way, by means of the bees that are continually

passing from one blossom to another, the pollen adhering to their legs and bodies and being thus carried from one field to another quite distant. Therefore, although we may isolate fields of squashes as far from other fields as possible, we are not sure but we may have more or less of this cross-fertilization by the bees, and the very means by which nature insures perfect fertilization of the blossoms may be the chief cause of the sports and crosses so common in squash culture by which new varieties can be multiplied at will.

During the summer and early fall there is quite a large demand in the market for melons, and on land adapted to grow melons, they are often very profitable. Of the different varieties, Extra Early Hackensack, Montreal Nutmeg and Arlington Nutmeg, of the green fleshed and Improved Christiana, Emerald Gem, Shumway's Giant, and Tip Top, of the salmon flesh varieties, are the most desirable. In some markets the green flesh melons are most in demand, but the salmon flesh are considered the best flavored.

I have no doubt it is within the memory of many of those present when the tomato was first introduced as an article of food. At first, from the beauty of its bright red fruit, called "Love apple," it soon became more widely known and used in various ways upon the table. Its cultivation rapidly increased, and many improved varieties were introduced. One of the first was Trophy. This was a very large solid-fleshed red tomato of excellent quality, but not coloring well round the stem. In 1860 the Essex Smooth Round Tomato was brought out and is still one of the best forcing tomatoes known. In 1870 the Paragon was introduced, and has proved an excellent tomato. In 1878 I introduced the Essex Hybrid, the first large purple tomato known. This has proved one of the best and most profitable tomatoes grown. Other good varieties are Acme, introduced in 1875 by Livingston; Perfection, in 1880; Beauty, in 1886; Stone, in 1891; Royal Red, in 1892; and Buckeye State and Dwarf Aristocrat, in 1893. In 1892 I had the honor of bringing out a new early tomato, the Comrad. A late variety, of my introduction, is the G. A. R. tomato. As a late tomato there is no other variety which will produce as large a yield of first-class tomatoes as this. There are many other tomatoes of merit, but to the market gardener the above varieties are as good a collection as can be made.

The tomato can be improved by two methods—by cross-fertilization and sowing the seed thus fertilized, selections being made of the best plants produced, or by selecting the most perfect fruit for a number of years, following on that line persistently until the desired object is accomplished.

In this manner new varieties can be produced from all classes of vegetables, simply by following the laws which nature has made to attain given results. There is a peculiar fascination in the evolution from the multiplicity of nature's crosses of new varieties and the establishing of such with fixed and permanent qualities which shall add another to the food products of the world.

If anyone desires to produce new varieties, let him study into the methods which nature takes to perform its wondrous works and the better he can understand its unchanging laws and infuse into his own soul the inspiration of the wondrous life on every hand, the greater will his success and the more complete his triumph be.



THOMAS CARTLEDGE.

WORKERS IN HORTICULTURE, X.

Thomas Cartledge, who died at his home in Philadelphia on May 17, had been actively engaged in horticulture for more than two score years. He was born July 8, 1834, in the house in which he died and to which he brought a wife, a daughter and a son. His apprenticeship was served with William Hall, of Andalusia. After the Civil War Mr. Cartledge became foreman for Pennock Bros., with which firm he was identified until a short time ago when he handed his interest in the business to his son, A. B. Cartledge. Thomas Cartledge has always been a willing worker in the ranks of those who strive for the advancement of horticultural interests. He has been for twenty-eight years an active member of the Pennsylvania Horticultural Society and was for three years its treasurer. He was prominent in the affairs of the Society of American Florists and was, from its organization until last fall, treasurer of the Philadelphia Florists' Society.

Miscellaneous.

SUMMER PRUNING OF TREES AND SHRUBS.

Within a few years past horticultural periodicals have so often referred to the fact that shrubs should be pruned as soon as their flowers disappear, that it is now fairly well understood by all that have the care of grounds. In nearly all cases it is the growth made this season that will give flowers the next, therefore but little of this new wood must be cut away. Thin out the shoots that have just flowered, which will give greater strength to the new ones forming. After the leaves fall there is no objection to a little pruning to shape the bushes, but the cutting away must not be to much extent of the latest shoots.

Deciduous hedges should have two or three prunings a season. A hedge closely clipped at all times is not always an addition to the beauties of a place. On the contrary, it gives a formal appearance at times which is out of place. But with the Japanese privet in mind as an illustration, pruning of the growing shoots is

such a help towards thickening it, that it is a temptation to prune it often. It grows so fast that in three weeks new shoots succeed the parts clipped away. Hedges of it here receive three and sometimes four cuttings. The first one is given quite early in June, the second, about July 15, the third about two months later. Well established hedges suffice with this, but younger, vigorous ones, may have the dates closer together, and a fourth clipping added, to be given towards the close of September.

A little pinching in of the ends of growing shoots is of far more use than winter pruning to trees and shrubs. The finger and thumb will check the onward progress of a shoot, and in the place of the point pinched off, there will be a half dozen or so of side shoots. Trees and shrubs both evergreen and deciduous quickly become dense bushes and as symmetrical as desired, when under the care of a summer pruner.

Fruit trees may be summer pruned to great advantage. An unfruitful tree can usually be made to flower by it. When the growth is about two-thirds completed, which in the northern states will be towards the close of July, cut away about one-third of the length of the young shoots. There is a slight check to growth following this, and this is conducive to fruitfulness, and as a result, flower buds form for the next season. Many prefer this plan to root pruning. Both are on the principle that a check to growth causes fruitfulness.

The topping of blackberries and raspberries is universally practiced in these parts by commercial growers, but amateurs have not all adopted the plan in as much as relates to raspberries. Commercial growers top the growing canes when

they reach the height of two feet. Side shoots result and a stiff central cane, capable of sustaining itself without the support of a stake. These bushes bear more berries than those not so treated, but the berries are hardly so large as those on canes not pruned until spring.

CLARE.

FLOWERS FROM PEAT MOSS, COAL ASHES AND FERTILIZER CHEMICALS.

For several years a soil of coal ashes with three per cent. of peat moss added has been employed at the Connecticut Agricultural Experiment Station for growing many different kinds of plants under experimentation. This soil was first used because it was known to contain very little plant food. Fertilizer chemicals could be added in varying but known quantities and thus the fertilizer requirements of the plant could be ascertained. Tomatoes grown in experimental cultures produced through five successive crops a larger yield than could be obtained from a soil of rich compost. The accompanying illustration shows a bunch of carnations grown in such a soil. The very largest blooms in the vase measured three inches in diameter.

Last fall two small divisions or plots situated side by side in one of the greenhouse benches were filled with roses of the Duchess de Brabant variety. One plot was filled with rich compost and the other with a soil of coal ashes and peat. The plants grew well in both plots, and up to May 1 each had produced as many blooms as the other, and there was practically no difference between blossoms from the plants growing in the coal ashes and those set in the compost.

The fertilizer chemicals applied to the

soil of coal ashes, calculated for a bench space of 100 square feet, is as follows:

Nitrate of soda, two pounds, twelve ounces.

Dissolved bone black, one pound, two ounces.

Muriate of potash, one pound, fifteen ounces.

The photograph herewith reproduced shows one of the plants growing in this kind of soil.

W. E. BRITTON.

New Haven, Conn.

ADHERENCE TO TYPE IN SEED BREEDING.

The highest quality and most practically valuable seed of a variety is not that which from a large planting will produce a few superlative plants but that from which the largest proportion of the entire product will be of fine type. Uniformity of product is really the most important object of the seed breeding, and to secure it we must have, first, a clear conception of just what in every particular an ideal plant of the variety should be, and secondly, we must adhere rigidly to that ideal in our selection of breeders from year to year, and that we may do so it is essential that we have on record a full, minute and accurate description of the ideal plant we are working to produce, and select such plants, and such only, for breeders, rejecting those that differ from the ideal in any way, even if the difference is of itself an improvement.

Every living organism is the result of the balanced sum of hereditary influence inherited from its ancestors, that of one in a certain direction being modified by that of another in a slightly different or possibly directly opposite one. So that the more nearly alike all these influences are, the more certain and easily predicted is the result. If we introduce into the sum of heredity, through one or more ancestors, a more or less prepotent tendency in a certain direction, we disturb the balance and necessitate a new adjustment, and it is not certain that the resulting plant will be modified in the direction of the new influence in just the proportion that its numerical value bears to the whole, and in a majority of cases it will be found that some of the fruit will be greatly modified, others not at all, and still others will be changed in various directions, some possibly in one directly opposite to that of the new factor.

To illustrate, suppose we have a variety of corn which is generally ten rowed but occasionally showing an eight rowed ear and which would be more desirable if the ears were somewhat larger. We find a plant with a twelve rowed ear, larger, but in other respects like the type, and are tempted to use it as a breeder, hoping that the new twelve rowed tendency will overbalance that to produce eight rowed ears so that we would get rid of them entirely and increase the size of the ten rowed ears. It is possible that such might be the result, but I know by costly experience that there is greater probability that the outcome would be an occasional fourteen rowed ear, some twelve, some ten and more eight rowed ears than ever before; and while some of the ears might be larger, many would be undersized, and we should find all sorts of variation from the type, so that our product would be far less uniform and desirable than before.

My success in seed breeding has always been in direct proportion to the clearness of my conception of the ideal I was striving to produce and the persistency with which I adhered to that ideal in my annual selection of breeding stock. Over twenty-five years ago I had a five-acre



ROSE DUCHESS DE BRABANT GROWING IN COAL ASHES AND PEAT MOSS

field of very fine corn in which I spent several hours in studying the variety and forming an idea of what a perfect plant of the sort should be, how tall, how many and how broad the leaves, color of the silk and tassel, length of husk, length and character of the ears, character of the grain, etc., etc. I then wrote a minute description of this ideal plant, with the limit of variation in each particular admissible in a breeding plant. I then went into the field and it took me many hours to find a hundred plants which did not vary beyond the limit in one or more particulars. I selected the best ten as breeders, and each succeeding year, with my description of the ideal plant in hand, made similar selections. The result of the work was that the sixth year I had on that same five-acre field a crop over 50% of which was within the limits of variation established for breeding stock six years before, when not one plant in a thousand came within the limit.

I am certain that my success in thus fixing the desirable qualities of the variety came from the persistent adherence to the clearly defined type. It may be argued that this course leaves no chance for improvement, and it does not as to type, nor should there be any. When we "improve" the type, we change it and in just so far as we are establishing a different variety, for by variety as used in relation to plants propagated by seed we mean all those plants which are of a certain type, and the very idea necessitates that type being a fixed one; but there is not a stock of any variety, either of vegetable or flower seed in existence in which there is not room for improvement in the proportion of the product which will come absolutely true to the type of the sort. An intimate acquaintance with most of the stocks of vegetable and flower seeds in common use convinces me that the greatest horticultural need of the age is clearly defined ideas of just what ideal plants of the different varieties propagated by seed should be, and a closer adherence by seed growers to such ideals in selecting seed stock. It seems to me that the defining and describing such ideal plants is work which can best be done by our national Department of Agriculture working in connection with our state experiment stations. Such descriptions, if well done, would be accepted by all seed growers and the result would be the weeding out of a great many sub-varieties and a vast improvement in the quality and practical value of our common varieties because of their closer adherence to universally accepted types.

WILL W. TRACY.

NOTES FROM GERMANY.

While the cool nights of April and almost continuous cloudy weather were fortunate conditions for planting, the advent of May was accompanied by a warmer atmosphere and clear skies, and a thunderstorm on the 3rd of the month settled the soil firmly about the roots of the new plantations. The fruit trees are now flowering very profusely, and it is to be hoped the crop will prove abundant. During the past season fruit trees were planted in quantity greater than ever before, especially apples. In former times almost every fruit plantation consisted of a great many varieties, but now only a very few sorts are grown. The variety most esteemed is the White Winter Calville, of which a single fruit of the best quality is sold for two marks (about fifty cents) in April, and in autumn for one mark. These fine fruits all come from Austria, and the variety succeeds only as a cordon on the Paradise stock in hot



CARNATIONS GROWN IN COAL ASHES AND PEAT MOSS.

summers. The trees begin to fruit the second year after grafting. American exporters should be careful so as not to ship any fruit to Germany which bears traces of insect pests, for all such shipments are refused at the frontier.

A pretty but little known plant is the summer snowflake, *Leucojum æstivum*, a native of Austria and Hungary. It blooms from May till July. The flowers closely resemble those of *Leucojum vernum*, but they are pure white, each petal tipped with green. The flowers are also a little smaller than those of the latter plant. The stems are from sixteen to twenty inches high, each bearing from four to six blooms. The bulbs are about as large as those of a tulip producing leaves as long as the flower stems, and once planted some six or eight inches deep and from eight to ten inches apart, they bloom freely every year. The plant likes a deep, rich soil, in which it forms large and handsome tufts.

The Royal Botanic Garden at Berlin, for two hundred years on the same site, will now be transferred to another place. The present location is too small, and it is surrounded by large houses injurious to many delicate plants. The new garden will be four times the size of the old one, viz., forty hectares. It will be interesting to learn which of the old trees and shrubs will grow on when transplanted. During the past two winters the larger ones were prepared for removal as follows: A circular ditch or trench three feet deep and twelve inches wide was sunk around each specimen, leaving a ball space some six to eight feet in diameter, with the trunk as center of the circle. A sheet of iron was then placed in the trench, dividing it into exterior and inner parts, the former part being filled with pebbles and the latter with rich soil. The filling process completed, the iron sheet was removed and the tree or shrub thoroughly watered. The young branches were also sharply cut back. It is hoped that the plants will make numerous new roots in the good soil and not enter the pebbles, as in that event they can be moved without serious risk. Trees with trunks more

than a foot in diameter have been treated this way, and they have made good top growth during the present spring.

UDO DAMMER.

OUTDOOR PROPAGATION OF ROSES.

Will some one kindly tell me through your columns, the best way to propagate roses outdoors?

S. J. Y.

In the extreme south many florists consider layering the most satisfactory method for outdoor propagation of roses, and in a climate where the rose makes such vigorous growth in a season this system certainly has much to recommend it. Where there is abundant growth suitable for layering it would be no difficult task to propagate and have ready for sale in a very short time any quantity of large salable plants. The southern florists usually layer directly into pots; they are plunged deep into the soil all around the plant that is to furnish the layers, as many pots as there are available shoots. When they are all in position (and full of soil) a stout stake is put down firmly outside of but close to each pot, the shoots are bent over, a slit is made on the under side directly above the pot, the part cut is pressed down into the pot, covered with soil, and pegged down to hold it secure; the operation is completed by tying the end of the shoot to the stake. It is not a very difficult feat and need not necessarily consume very much time, besides if the weather is at all favorable success is reasonably certain. In a short time the shoot will have thrown out roots immediately above the cut and it can then be severed from the parent plant. The work is always done in the early fall, as soon as the wood is mature and climatic conditions are favorable. Cuttings of outdoor roses are sometimes rooted in a cold frame with just enough protection to keep off the strong sunshine, drying winds, and freezing cold. For the state of Georgia the early part of October would probably be the best season to put in the cuttings. This is a time honored mode of propagating, but for rooting

hardy roses, either north or south, I would recommend in preference a hotbed and the summer months for the work. All that is required is a good deep frame facing north, plenty of stable manure, good sash and movable shade. Fill the frame with manure almost up to the glass and tread it thoroughly; cover with three inches of clean coarse sand; when the bottom heat registers 90° with a tendency downward put in cuttings, water thoroughly the first time, afterwards sprinkle and water as often as may be needed to preserve the foliage crisp and fresh. Keep frame close until roots begin to form; a little air morning and evening to carry off excessive moisture will be sufficient. Shade whenever sun shines, but at other times give full benefit of the light. Cotton cloth stretched on a frame gives about the right amount of shade and if it is suspended some distance from the glass so as to allow a circulation of air between the two, it will help materially in keeping down the temperature. With good cuttings from fairly well matured wood and good attention, a frame of this kind will root from eighty to one hundred per cent., according to variety. After potting, the plants should have the same treatment as regards shade, light and air for a few days as recommended for the cuttings.

ROBT. SIMPSON.

CHICKWEED ON LAWNS.

ED. GARDENING:—In reply to "Subscriber," who, in the May 1 issue, asks for information as to the treatment of lawns infested with chickweed, I would suggest that the grass be cut less severely. Where grass is kept very closely cut this weed and dandelion become too numerous, and the closer the grass is cut the more the weeds are favored. Let the grass grow six weeks in the spring before cutting; do not cut it within an inch and a half of the soil at any time; in the fall let it grow quite long and remain in this state over winter; make the first cutting in April, but do not use the lawn mower before May 15 and put it away again September 1.

C. B. W.

PROTECTING ROSES.

Our friend, W. C. Egan, asks in a late number of GARDENING for the experience of others in protecting the Empress of China rose. I should say that if I have the rose tree, as furnished by a Chicago nurseryman, it is not worth protecting. But for the protection of all my roses I now tie the branches as closely as possible and lay them down on the ground. I then nail two boards together in a trough form and place the contrivance over them, with a foot of coarse manure over all. All treated thus have come out finely. Those covered with manure and litter without the boards are about dead.

Wisconsin. F. W. WOODWARD.

CONNECTICUT POMOLOGICAL SOCIETY.

The first field meeting of the Connecticut Pomological Society for the season of 1898 will be held at South Glastonbury on the farm of the society's president, Mr. J. H. Hale, in the height of the strawberry season, about the 20th of June. The big Maximus strawberry and many other new varieties fruiting in the test plot, alongside of many standard varieties, under special methods of culture, will be the leading feature of interest, although the large fields of berries, chestnut orchards, Japanese plum orchards, and the great peach orchards, of which

there are more than 200 acres of cultivated fields on President Hale's home farm, will help to furnish the day's instruction.

Kindred societies are invited to send delegates to any and all the field meetings of the Connecticut society and lovers of horticulture everywhere are invited to this June meeting, exact date of which, programme, etc., may be had of the secretary, H. C. C. Miles, Milford, Conn.



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Societies.

TEXAS HORTICULTURAL SOCIETY.—The annual state convention of horticulturists will be held at College Station, Texas, July 13 to 15. E. L. Hoffman, of Fort Worth, is secretary.

WAYNE COUNTY HORTICULTURAL SOCIETY, RICHMOND, IND.—The May meeting was devoted to impromptu discussion. On June 11 the society will be the guest of Nathan Garwood and premiums will be offered for displays of strawberries and cut flowers.

MISSOURI VALLEY HORTICULTURAL SOCIETY, KANSAS CITY, MO.—L. A. Goodman, secretary of the state society has entertained the local organization at its May meeting for thirteen years past and in every instance the weather has chanced to be perfect. At this year's session the following essays were read: "Ornamental Foliage Plants," G. E. Kessler; "Aquatic Plants," Stephen J. Hare; "Some Phases of Horticulture," Daniel Carpenter.

CATALOGUES RECEIVED.

American Road Machine Co., Kennett Square, Pa., ventilating apparatus; The Walker Fertilizer Co., Clifton Springs, N. Y., fertilizers; Knight, Clark & Co., Westham Nursery, Langley, Eastbourne, England, plants; Fairmount Tree Protector Co., Philadelphia, Pa., insecticide; J. H. H. Boyd, Gage, Tenn., tree seeds; Greening Bros., Greening P. O., Mich., nursery stock; J. Lambert & Son., Trier, Germany, seeds and plants.

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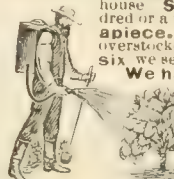


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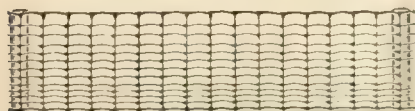
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GARDENING

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CHICAGO, JUNE 15, 1898.

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No. 139.



PRUNUS TRILOBA AT EGANDALE.

Trees and Shrubs.

PRUNUS TRILOBA.

Under the common name of the double flowering plum, this shrub is deservedly well known to most northern gardeners. Its almost absolute hardiness is an essential element in its favor. Once in a while, during winters of extreme cold, it may lose its flower buds, but the damage ends there. It is a native of China. While those usually cultivated have double pink flowers, a single-flowered form is known. In GARDENING February 15, 1897, there is illustrated a very fine specimen grown in the natural way, that is, on its own roots and in shrub form. Mr. Temple describes it as being fifteen feet in diame-

ter and eight to ten feet high, and as being planted some twelve years.

The two specimens here illustrated are what are termed standards, that is, grown to a tree form. Some shrubs like the *Hydrangea paniculata grandiflora*, may be grown as standards, while still on their own roots, by allowing, at first, only one stem to grow, which is trained up straight, with no side branches except at the top. Generally, however, standards are produced by budding or grafting on some strong growing species of the same or an allied genus. The specimens illustrated are grafted at a height of four feet from the ground. The width and height of the head of the one at the left is six feet.

As a rule standards are not as long lived as when naturally grown, as in the latter case the shrub renews itself by new shoots from the roots, which standards

cannot do, therefore more care is required in growing this form, especially in endeavoring to retain a dense head of bloom and leaf. This denseness is easily retained in shrub form, as the renewed growth from the bottom produces the new wood that gives the most flowers and leafage. The heads of standards may be kept in very fair form, by due attention to cutting in immediately after blooming. These specimens were exhibited by a Holland firm on the Wooded Island at the World's Fair, and were transferred to Egandale in the spring of 1894. - W. C. EGAN.

PAULOWNIA IMPERIALIS.

This doubly handsome tree should find a place in all parks and private grounds making any pretence whatever to a selection of trees, the flowers and foliage being both unique. It is almost impossible to

pass by one of these trees, no matter how much engrossed in other affairs, without wondering at its beauty or seeking its name if it is unknown. Like most foreigners it possesses an air distinctive, and in this case majestic. The paulownia will soon lose her first charms, which last easily three or four weeks and consist of a magnificent display of light blue sweet scented panicles, which seem to harmonize everywhere. These will be followed by a leafage truly tropical in appearance.

It is customary with some to cut this tree down to the ground every year, by this means causing it to produce much larger leaves. A better method would be to train it with one main stem and allow it to make ten or more lateral branches clear of the ground, and then prune hard every year after it had flowered, it being then easy to cut back to a new growth, which by that time can be plainly seen. By this plan a clean well shaped tree would be formed that would prove an ornament to any lawn.

When allowed to grow at pleasure it makes a tree thirty or forty feet high, but seldom shapely, as branches here and there die back making an otherwise fine tree look unsightly.

B. HALL.
Brooklyn, N. Y.

CERCIS CANADENSIS.

The judas tree or red bud, which illumines the woods in early spring with clouds of pink, is too well known to require any description here. It is one of our most beautiful native trees. It makes an effective companion to the white *Cornus florida* and shares with it the honor of standing at the head of the list of beautiful and showy trees for hillsides and borders of woods, and for general planting in parks and large estates. Several varieties bearing flowers of deeper pink than the type have been introduced from time to time, and a fine pendulous form is an especially valuable acquisition.

NOTES FROM EGANDALE.

One of the chief recommendations of hardy perennials is that they flower so early in the season, and at a time when they are doubly welcome, after their winter's rest. We hail their appearance as that of old friends, and this pleasure is carried on through the whole summer season, from the appearance of the venturesome snowdrop to that of the tardy goldenrods and asters. At this writing (May 25) most of the annuals are either in the hotbeds or the cold frames, for our nights are still cold and it is not yet too late for killing frosts. I am going to take a walk among the shrubberies and perennial beds and note what blooms are there to welcome me. Some have flowered and are now growing actively and in the case of shrubs have been cut in and put in form.

Among the shrubs in bloom are lilacs in variety, *Exochorda grandiflora*, *Rhododendron Vaseyi*, *Azalea mollis* Japanese flowering quince, bush honeysuckles, *Prunus maritima*, *P. sinensis*, *P. Waterii*, *Spiraea prunifolia*, *Spiraea Thunbergii*, snowballs, *Calycanthus floridus*, *Kerria Japonica*, *Rhodotypos kerroides*, barberries, *Caragana jubata*, several forms of *Pyrus floribunda*, native crabs and thorns. *Cytisus purpureus* and *Akebia quinata* and periwinkles among the vines.

Among the perennials we find a still greater number, there being the following: *Aquilegia* in variety, *Arabis alpina*, *Arenaria dianthoides*, *Bellis perennis*, *Centaurea montana*, *Cerastium tomentosum*, lily of the valley, *Dicentra eximia* and *D. spectabilis*, *Doronicum plantaginifolium*, *excelsum*, *dodocatheons*, *Dictamnus Fraxinella*, *Geranium sanguineum*, *G. maculatum*, *Hemerocallis flava*, *Heuchera sanguinea*, irises, *Linum Austriaicum*, *Lychnis flos-cuculi* fl. pl. and the double form of *L. viscaria*, *Narcissus poeticus*, *Ornithogalum umbellatum*, pæonies, both herbaceous and tree, Iceland poppies, *Phlox subulata*, *P. amœna*,

P. divaricata, *P. obovata*, *Potentilla tridentata*, *Primula officinalis*, *Saxifraga cordifolia*, *Silene maritima*, *Thalictrum anemonoides*, *Tiarella cordifolia*, *Trollius Europæus*, *Veronica speciosum* and *Verbascum Phœniceum*.

Here are some sixty different kinds of flowers appearing before "the flowery month of June," and surely that speaks well for a combined shrubbery and perennial border. Where inclination and space permit, the number may be increased to a very considerable extent. W. C. EGAN.

PRUNING RHODODENDRONS AND AZALEAS.

The notes on rhododendrons from "H. H. H.," a well known authority on the plants referred to, in a recent issue of GARDENING, will be a great help to those about to set out some of those plants. I would like to supplement what has been said and relate my experience in the pruning of the rhododendron and the azalea. These plants are often allowed to grow tall and ungainly from a belief that they cannot be pruned, but this belief is quite a mistaken one. There is no risk at all in the matter, as, unlike coniferous evergreens, new shoots will appear from old wood below the foliage. Coniferous evergreens, such as pines, arbor vitæ, retinosporas, and the like, are ruined if pruned below their foliage, but not so with the rhododendron. Cut it anywhere desired and new shoots will appear.

In nurseries where these plants are grown one-sided, they are brought into shape by pruning. The work is done immediately after flowering, or earlier if the plants are not required for selling. The knife is used just as it would be on a deciduous shrub, and with about the same result. At times there is a hesitancy to prune from the fear of destroying the prospects of flower buds for the coming year. This fear is justified when pruning is performed late, but done early, no later than at the time of the fading of the flowers, the new shoots will form flower buds as usual. Any one shoot can be pruned back as well as all of them when desired.

Rhododendrons complete their growth in a very short time after they start to grow in spring, and, of course, it would be useless or worse to prune after growth for the season was completed. What has been said of the rhododendrons applies just as well to all azaleas. Lots of straggling bushes are seen in collections which sadly need the pruning knife. I desire to add my testimony to what "H. H. H." says of the importance of moisture to the rhododendron. I have seen the wild *R. maximum* along the ravines in the Blue Ridge Mountains of Pennsylvania growing on the moss-covered rocks projecting from the streams which coursed by them, the roots practically in the water. And how the plants did flourish! In that region the finest plants are those growing close to streams at the base of hills. CLARE.

FLOWERING TREES.

Under this heading one naturally thinks of the crab, cherry, plum and peach or of the magnolia in favored situations. All these are handsome and showy, but there are others less gorgeous and yet as deserving of admiration as their brighter colored associates. There is a Camperdown elm on my lawn of well balanced proportions, and as viewed from the porch, its many branches start from the center of the head with a short upward



CERCIS CANADENSIS.

curve, and then gracefully bend slightly towards the earth, the tips again assuming an upward tendency, the tree being yet comparatively young, although it has a spread of some ten or more feet. This form somewhat resembles the outlines of the out-stretched wings of a very large bird. At present the branches are thickly covered with its flowers of a pale pea-green color. The tree seems thatched with them, so closely are they arranged. The resemblance to the wings of a bird is more pronounced now than when the tree is in leaf, as the flowers lie more closely to the wood than do the leaves. Some visitors have said it is one of the handsomest trees in bloom on the place, although there are specimens of *Prunus triloba* almost dazzling to look upon.

There is a young Reitenbach maple, a variety of the Norway, in bloom that I consider quite handsome in its orange yellow tone intermixed with the deep red of its sheath leaves. The variety Geneva is more sombre in color and not so pleasing. The scarlet flowers of the scarlet or swamp maple, *Acer rubrum*, are well known and admired, and the feathery inflorescence of the hard maple is certainly worthy of admiration. The drooping tassels of the ironwood impart to the tree a degree of airy elegance that at once pleases the observer, and *Cercidiphyllum japonicum* is very modest in its blooms, only a close examination revealing the n.

While we are enjoying the bursting into bloom of the showy flowers, let us examine and inspect the young unfolding leaves of almost any tree. There is a freshness and beauty in them all, from the intense red of some of the oaks to the folded leaves of the tulip tree. There is beauty and promise in every movement of nature in the spring time that we may enjoy and profit by if we but make the effort.

W. C. EGAN.

CLEMATIS PANICULATA.

So rapidly has this beautiful and restful hardy climber been distributed, and so simple are its requirements, that little need be said in explanation of the illustration herewith presented excepting that it shows a portion of a space about 100 feet long which is planted as a hedge on the north side of the office at Waban Conservatories, Natick, Mass., and to call attention to its desirability for clothing unsightly or waste places with a mantle which is beautiful the whole year through. Its rich green foliage during summer, its masses of fragrant white blossoms which throughout fall and winter become clouds of feathery seed vessels, should make it pre-eminently a favorite everywhere.

PROPAGATION OF CLEMATIS PANICULATA.

This excellent plant is so easily and cheaply raised from seed that nobody will now attempt to go to the trouble and grow them in any other way, though a number of years ago, when seed was scarce and rather high priced, propagation by cuttings was practiced in many quarters with variable success. The most satisfactory results were obtained by summer propagation in sash frames running east and west, shaded with canvas stretched permanently over a lattice frame a foot or so above the sash on the south side, slanting up to a height of about four feet on the north side of the frame. About a foot of fresh horse manure is tramped in the bottom of the bed, covered with three or four inches of sharp, clean sand, which is then well firmed and thoroughly watered. The thinner and weaker young green wood



CLEMATIS PANICULATA.

is cut up into suitable lengths for the cuttings, few of the stronger sappy shoots showing any inclination to root. Once, or in real hot weather, twice a day the cuttings receive a slight syringing overhead and the frame is kept close and tight for three or four weeks; then a crack of air is left on each sash, overnight only at first then for an hour longer, until by degrees the plants are accustomed to a little fresh air all day. Later on the sash are removed, and in a few days the young plants can be potted off, placed in the same kind of a frame and kept close again for a short time. Strict attention and vigilance is required; to neglect them once brings disaster. It is beneficial to the cuttings, when first inserted, to shade them additionally by shutters or lath shades placed over the canvas frame during the hottest part of the day. A week or ten days after insertion the extra shade may be dispensed with. K

HERBACEOUS PLANT NOTES.

As the season advances we see new features in the herbaceous ground every day; by the end of May hundreds of species and varieties are out in full bloom; many of them, being very valuable for cut flowers, should be grown extensively by our florists. The large flowering aquilegias and some of the smaller free-flowering species are truly useful in many ways; they are elegant, unique and graceful. What flower can we compare with the delicate, slender spurred, blue and white *A. cerulea*, or the deeper colored, shorter spurred, *A. glandulosa* and *A. Olympica*, with some of their hybrids? We have no other flower which approaches in any way the singular and elaborate construction or peculiar delicacy of coloring represented in almost all the aquilegias. Of course if we only grow the ordinary garden varieties of *A. vulgaris* or *A. Sibirica*, which are nearly all small flowered and often dull and uncertain in their coloring when grown from seed, and if we are not familiar with the graceful, large, open flowers of the other species, then the above description must appear

as an exaggeration; but I have never seen a lover of flowers yet who would not stop a few moments at least before a bed of the rarer species, or even the selected varieties of the common columbines; they are always interesting.

The irises are very plentiful everywhere and all of them, even the inferior sorts, sell readily in the cut flower market; but it is good policy to grow only the very best. The pyrethrums have found their way into the cut flower market long ago, and the single forms in bright red and white are decided favorites; they are used often in preference to the doubles for parlor vases. *Hemerocallis flava*, the lemon-colored day lily, has been used extensively for many years; it has been in bloom with us since the latter part of May, and as we have a good lot of it planted out we may be able to cut from them for a month to come. *Lychnis viscaria fl. pl.* is a mass of dazzling color and attracts the eye from afar. Where a bright flower is wanted for any purpose this fills the bill in the month of June, and we cannot do without it. Having a stiff erect stem of good length and excellent lasting qualities, it is a capital thing for vases.

Ethionema grandiflorum is one of the daintiest cut flowers at this time of the year. The slender stems grow semi-erect and from ten to twelve inches long; they are closely set with small linear leaves and every one of the twigs terminates in an elegant flowerhead. It is little known and but seldom found in collections, probably only because some difficulty is experienced in its propagation, though cuttings of the half ripe wood root quite freely in midsummer and will make good, strong, blooming plants in less than two years; seedlings will produce a few flowers in their second year, but seed is rare and the young plants are very liable to damp off before they are large enough to handle; layering may be practiced successfully, but the layers should not be separated from the old plant until well rooted, which usually takes more than one year, unless the season and conditions are very favorable for the formation of

roots. It is with us perfectly hardy without protection, never freezes back, and when once planted will last forever apparently; we have a few very old plants which never were disturbed since first planted; each of these measures about eighteen inches across, a dense mass of delicate pink. A few plants on the half shady part in the rockery do not grow quite so compact as those in the open border; their growth is longer and thinner, but, rambling loosely over the rocks, the beauty of every individual flower on the plant is shown to advantage; and protected as they are here from the hottest sun, they last much longer in perfection.

Hormium Pyrenaicum is a low free growing plant which sends up numerous spikes well furnished with deep blue salvia-like flowers. Dark blue at this season is quite scarce among the cut flowers, and with us, at least, everything in this color is used up as fast as it comes out; the stems are about ten inches long and the spikes thickly set with showy flowers to their very tips. The foliage is short and broad, rather rough to the touch, but neat and evergreen; the habit is compact and clean; no dead or decaying leaves show beneath the younger growth; it is easily propagated by division in spring or fall and extremely hardy; light soil is best for it, though good results were obtained in a stiff but rather dry loam, while in wet places the plants are generally short lived. Another very useful blue flower is the ordinary *Campanula glomerata*, but when you want the deepest and brightest shade *C. glomerata Dahurica* is the one to plant; it will not reproduce itself from seed and must be increased by division or from cuttings. The stems grow up to a height almost of two feet on old, well established plants; the big, many flowered, close heads are really beautiful and remain in perfection for a long time; new flowers open out as the older ones fall off. The Cheddar pink, *Dianthus cæsius*, is freely used here as a cut flower and is very popular, principally perhaps because of its very decided and lasting clove perfume; the color is a soft shade of pink, the flowers not very large but well shaped with deeply fringed edges; no other of the whole family is so delightfully fragrant, though the flowers in many of the various species are superior to it in size and shape.

Helenium Hoopesii is one of the very best deep orange yellow flowers at the present time; it can be cut in long sprays and keeps well in water. After the dornicums are gone this superior flower is ready to take their place. *Thalictrum aquilegifolium* produces long feathery plumes of handsome lilac, pale purple, pinkish or, though rarely, white flowers. It is an excellent keeper and comes handy for large vases and in all decorations.

J. B. KELLER.

THE Australasian governments are waging vigorous war against the importation of diseased or insect-infested fruits from other quarters. A Tasmanian journal asserts that "there were landed on the Hobart wharf recently no fewer than 800 cases of apples, rejected by the New South Wales inspectors, out of 4000 cases shipped. The fault again found with the fruit was that it bore traces of mussel scale and black spot. This makes 1300 cases of Tasmanian apples sent back from Sydney within a month. One steamer took altogether 7,000 cases, but 3000 of these were for Queensland and other ports, and as they have a vegetable disease act in Queensland also, it may be that some of these consignments will meet

with the same fate, though so much hostility to our fruit growers is not expected to be displayed there as is the case in New South Wales." It is evident that the fruit-pest troubles are not confined to Uncle Sam's dominions.

ORNAMENTAL BEDDING.

PART V.

To lay out a diamond (rhomb), we should know the length of the two diagonals. If for instance, they are nine feet and six feet, then set two pegs *a* and *b*



Fig. 16.

in the ground where you want the bed nine feet apart; with any desired radius draw curves from *a* and *b* to both sides as indicated in Fig. 16, set pegs at intersections, tie a piece of twine between these two pegs and a piece between *a* and *b*, where they meet set a peg, *c*, and from this to each side measure half the distance of the short diagonal, in this case three feet, and set the pegs *d* and *e*. The pegs at the intersections and the twine can then be taken away and *a-b-d-e* mark the diamond, peg *c* will come handy in laying out the design.

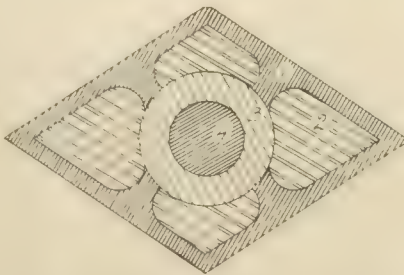


Fig. 17.—A design for the above diamond.

Fig. 17. 1, *Alternanthera amœna spectabilis*; 2, *A. aurea nana*; 3, *Santolina incana*; 4, *Achyranthes Lindenii*.

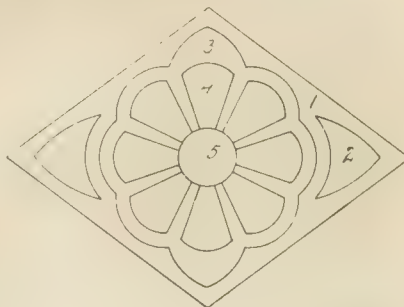


Fig. 18.—A design for a diamond 9x12 feet.

Fig. 18. 1, *Alternanthera amœna spectabilis*; 2, *Pilea nana*; 3, *Alternanthera aurea nana*; 4, *A. spatulata*; 5, *Coleus Golden Bedder*.

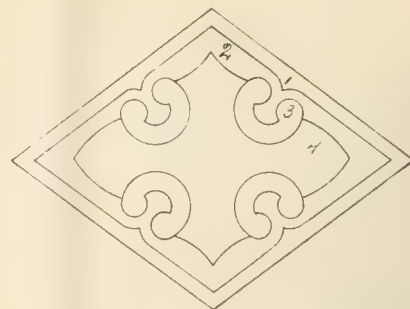


Fig. 19.—A more complicated design for same dimensions.

Fig. 19. 1, *Alternanthera paronychioides*; 2, *A. aurea nana*; 3, *Santolina incana*; 4, *Alternanthera paronychioides major*.

Next we will turn our attention to ellipses and how to lay them out. In Fig. 20 *a-b* is called the major axis, *d-e*

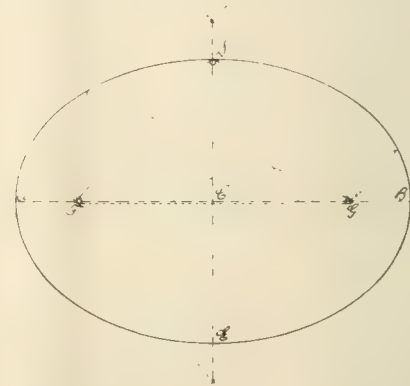


Fig. 20.

the minor axis, *c* is the center, *f* and *g* the foci; the distance from the center to either focus is called the eccentricity; any

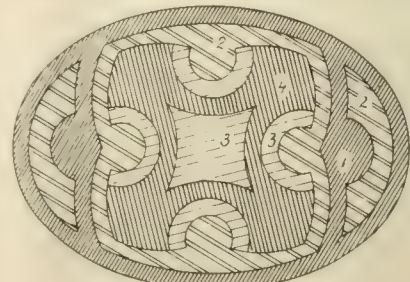


Fig. 21.

straight line through the center with vertices in the ellipse is a diameter. The relations of the foci to the ellipse are that the sum of the two straight lines

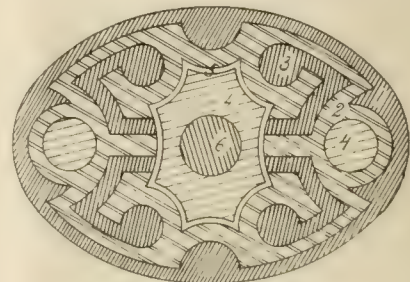


Fig. 22. 8 1/2 x 12 feet.

drawn from any point of the ellipse to the foci is always the same. To lay out an ellipse for instance nine feet (major axis) by six and one-half feet (minor axis) choose the place for line *a-b* and put pegs at these two points nine feet apart. Pro-

ceed to find *d* and *e*, as explained for diamonds, *c-d* and *c-e*, each three feet three inches, put pegs at *d* and *e*. From *d* intersect *a-b* with radius *c-a*, in this case four and one-half feet, which gives the foci *f* and *g*. Tie a piece of twine around

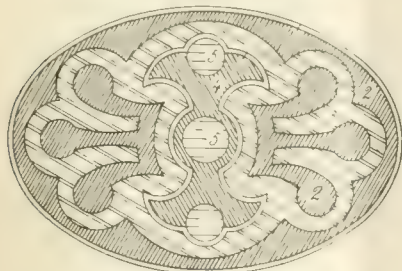


Fig. 23. 11x16 feet.

d-f-g, lift peg *d* and with it, keeping the twine stretched, draw the ellipse. The dotted lines indicate some of the different positions of the twine and pegs during this process. Put peg *d* in place again. It, as well as pegs *a-b-c* and *e*, will come handy in laying out the design. Fig. 21 shows an easy design for an ellipse of this size.

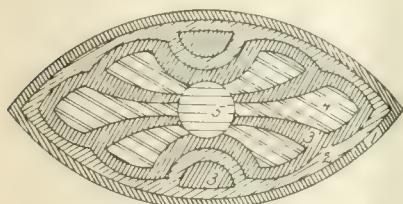


Fig. 24. 20x10 feet.

Fig. 21. 1, *Alternanthera paronychioides*; 2, *A. aurea nana*; 3, *Santolina incana*; 4, *Alternanthera spatulata*.

Fig. 22. 1, *Alternanthera paronychioides*; 2, *A. aurea nana*; 3, *A. paronychioides major*; 4, *Santolina incana*; 5, *Echeveria rosea*; 6, *Achyranthes Lindenii*.

Fig. 23. 1, *Echeveria secunda glauca*; 2, *Alternanthera amœna spectabilis*; 3, *A. aurea nana*; 4, *A. spatulata*; 5, *Santolina incana*.

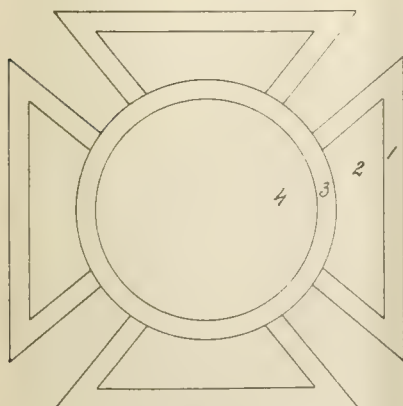


Fig. 25.

These two designs are of a more complicated nature. The lanceolate outline of Fig 24 consists of two curves with equal radii; the centers are situated in the perpendicular of the middle, same construction as when laying out the diamond and the ellipse, but more about this later.

Fig. 24. 1, *Alternanthera paronychioides*; 2, *Pilea nana*; 3, *Alternanthera amœna spectabilis*; 4, *A. aurea nana*; 5, *Santolina incana*.

The Maltese cross is a design commonly asked for; it is easily laid out and can be made to look very presentable by tasteful planting.

Fig. 25. 1, *Alternanthera paronychioides major*; 2, *Santolina incana*; 3, *Coleus Golden Bedder*; 4, *Coleus Verschaffeltii*.

This represents a ten-foot cross; first draw a ten-foot square, then from the center, where the diagonals cross each other, draw the circle, three feet 3 inches radius; from the corners of square measure along each side one foot two inches and set pegs; from the points where the diagonals cross the circle measure to each side six inches and set pegs. Now draw twine around the pegs for each wing; draw the lines and you have the outline of the cross. For the planting of borders one and three, I have allowed six inches. Do not make the mistake to plant different colors in the different wings. H. HANSEN.

AN EXCELLENT HARDY FERN.

The ostrich fern, (*Onoclea Struthiopteris*), is emphatically the people's fern. In ninety cases out of a hundred it can be grown with perfect success, doing far better in cultivation than in its native wilds. It can be successfully taken up, shipped and planted at any season. In winter one could dig it out from under the snow and succeed with it; in summer it is a perfect success even when three feet high, when carefully taken up and set out where it is wanted. If carefully managed its fronds will not even wilt. It succeeds just as well in the house or greenhouse as outdoors, simply requiring a soil containing plenty of rich humus, partial shade and plenty of moisture during seasons of drought. For decorative purposes it has few rivals among ferns, surpassing all other native species except perhaps the huge osmundas, and much easier to handle than these.

In Michigan, where it abounds, it is most extensively used for decorative work on such public occasions, as Memorial Day, Children's Day, Commencement Day, Fourth of July, etc., being taken up from the woods, placed in boxes, pots, etc. The writer has a splendid bed of ferns, largely of this species, most of which were planted in 1878. To be sure most of the original plants have died, but their number has doubled in their descendants, for it multiplies very freely by offsets as well as spores. The root is a huge bulb-like affair three or four inches thick and five to eight inches high. From its top rise five to ten gracefully recurving fronds two to four feet long and six to eight inches wide, gradually separating from the top of the root to the height of about one and one-half to two feet, when they abruptly recurve. So peculiarly graceful is its habit that it never fails to attract attention even in a large collection of greenhouse ferns, and when so grown few would believe that this splendid plant is truly a native species. W. A. B.

NELUMBium SPECIOSUM.

On nearly every ones grounds the means exist to have beautiful water lilies, and their presence gives so much pleasure to all who see them, that a few words concerning one of the commonest of the tribe, *Nelumbium speciosum*, may be useful at the present time.

There are but two species of *nelumbium*, 't' is one, *N. speciosum*, and *N. luteum*. The latter is our native one, common in many parts of the country. It is yellow flowered, fragrant and beautiful. *N. speciosum* is known as the Egyptian lotus, or Egyptian bean. Its flowers are white, with a lovely pink shade.

What these plants want is water, fresh but tolerably still, and so situated that it will not be subject to overflows. Very often a light running stream will afford the means to construct just such a place as the plants require, as has been the case in Fairmount Park, Philadelphia, as shown in the illustration herewith presented. A little rivulet coursed along to Lansdowne Ravine, and this afforded the opportunity to create not only the water scene the picture depicts but others in different parts of the park before the stream passed into the Schuylkill River.

The species here shown is *N. speciosum*. Mr. C. H. Miller, the superintendent, tells me that this plant increases with great rapidity. It was but a very few plants that were placed there when the pond was formed, yet it took no more than about four years to cover the surface almost as well as it is to-day. All it needs, he says, is that a good depth of mud should be there for the roots, and there must be a sufficient depth of water to prevent frost from penetrating to the bottom, for frost will kill the roots. The flow of water is gentle all the time, so that there is nothing to disturb the mud about the roots.

All kinds of water plants are great attractions to visitors of all public grounds, as witness the number of persons viewing them on almost all occasions. And when these plants are in proximity to other lovely scenes their charms are still more admired. It will be conceded by readers of GARDENING that the picture is a pretty one. It represents a portion of the park near Horticultural Hall, where crowds throng in the hot summer days, because of the grateful shade and the beauty of the scene. A portion of the lovely avenue of pin oaks for which this park is famous, is in sight as well as a view of some of the natural trees which embower the ravine further down the course of the stream.

The pin oak is one of the best of its family for avenues of the kind displayed. In the first place it is almost as easy to transplant as a maple; it takes to a new location more freely than any other oak. Its deep green, finely divided leaves, are always pleasing to look upon. Then, as will be observed, there is a drooping tendency of the lower branches, which goes on till they touch the ground. These trees have been planted about twenty years. They are about thirty-five feet high, and the branches spread about the same number of feet. At three feet from the ground, the circumference of trunk is about four feet.

JOSEPH MEEHAN.
Philadelphia.

The Greenhouse.

FORGING PÆONIES.

Herman Schiller, of Niles Center, Ill., has achieved noteworthy success in forcing herbaceous pæonies for Easter pot plants. His method is to lift the plants from the field about October 1, pot immediately, water thoroughly and plunge in a cold frame where they remain chilled just enough to make them dormant until time to bring them into heat. Best results are obtained by leaving the plants in a cool greenhouse or shed for a few days between the removal from the cold frame and the beginning of forcing. An even temperature of 58° to 60° is maintained until the blooms are out and attempts to retard growth by withdraw-

ing heat after it has once been applied have been found to be disastrous. The pots being well filled with roots the plants are fed on liquid manure.

Mr. Schiller has tried several varieties but has found little success with other varieties than the officialis. Of this the red is a week or ten days earlier than the pink and two weeks earlier than the white. It takes from six to eight weeks of heat to bring them into flower. After blooming in pots the plants cannot be forced the following season. Mr. Schiller forced several hundred plants the past season and they brought him an average of \$1.50 each, some fetching as high as \$3.50. The reds were all gone before Easter, but the pink and white were just right for that occasion. The pinks sold better than the others. J. T. A.

SPECIMEN PLANTS OF CHRYSANTHEMUMS.

Specimen plants have made rapid growth since they were shifted into eight-inch pots. They will require frequent stopping to keep them shapely. Towards the end of this month the last shift will be given, and the real work of making specimens will begin. More will be discarded, and probably out of a hundred to commence with only forty will be grown on. This does not mean that we shall altogether discard the remainder. A piece of well-prepared soil will be selected and the best planted out, being careful to pack the balls closely with finely pulverized soil, so that when we come to lift them there will be less danger of the balls breaking apart. It is well to remember this where the general practice is to cultivate plants for specimens in the open fields.

Some pretty specimens can be grown in eight-inch pots, and along with those specially selected for exhibition a few are grown for this purpose. Prizes have been offered by the Massachusetts Horticultural Society for untrained specimens, though just as neat plants can be grown in this size as in larger pots. Such plants are kept a stage behind. For the purpose of smaller specimens special varieties are chosen, among them Golden Ball, yellow; Norma, pink; Symphonia, pink;

John Shrimpton, crimson; Midge and Adelaide, white.

For pot plants a fairly light and rich soil is to be preferred. It drains better and it is easier to keep the soil sweet, with less danger from overwatering. As abundant drainage is essential we order our pots with three holes. Charcoal, once used for such varieties as were liable to burn, is now used for all. It can do no harm, and when broken finely displaces little soil. If the soil be unavoidably heavy it is well to have it under cover some time before needed, so that it will not pack when handled. We pot firmly and evenly, but do very little pounding, except in cases where plants have become pot bound, then we must be sure the old and the new soil become firmly incorporated. They are watered sparingly until active growth is resumed, but never allowed to get dry.

There is nothing so dangerous in the cultivation of specimens as to have a plant get thoroughly dry. Unless it be soaked at once in a tub of water it will be a plague the whole season, always dry. The care of specimen plants should be left to one man, and that man an enthusiast. We must know them as a teacher does children; no two are alike in behavior. Some take more water than others. There are delicate ones which are indispensable for some reason, and these must be pampered. An overdose of liquid manure would spoil them for a season. Of such there is generally a warning indication by their manner of growth. Soft growth is a sign of weakness in this respect. Others, such as W. H. Lincoln, can be fed to an incredible degree.

T. D. HATFIELD.

DRACAENA GODSEFFIANA.

As a decorative plant this novelty will be found most distinct, useful and remarkable. It has little resemblance in general to ordinary dracenas, but is nevertheless vigorous in constitution and of peculiarly graceful habit. The foliage is deep polished green, heavily spotted and splashed white, the stems slender and very wiry. Not easily affected by insects, it has the constitution of an aspidistra and grows

very freely. A small plant sent by Sander & Co., to the Cleveland convention arrived in excellent condition.

A. DIMMOCK.

SWEET PEAS.

ED. GARDENING:—Our Blanche Ferry sweet peas turn striped in very warm weather, and we would like to know whether there is not a better pink variety for market purposes. We would also like to know of a better white for outdoor culture than Mrs. Sankey, which is tinged with pink. Next year we are desirous of having our sweet peas in bloom about February 1, and would like to have information as to the time of sowing, temperature and the two best varieties, one pink and the other white. J. S. Tennessee.

Replying to above, we had same trouble last year outdoors. We do not force any under glass nowadays, so ventured to get replies from some of the successful growers of sweet peas who do.

Edward Swayne, Wawaset, Pa., says: "We have had the usual trouble with Blanche Ferry coming striped, but do not know the cause. The trouble is not confined to those grown under glass. This year we have them outside more than 95% pure. Last year they were all striped. Inside we have about half our house nearly all true to the type, and the other half nearly all striped, from the same lot of seed. Better save our own seed from best plants." In answer to the question, "Is there not a better pink for market purposes?" Mr. Swayne would not say positively, but would suggest as worthy of trial Miss Hunt, Lovely and Prima Donna; and as a white variety for forcing, Blanche Burpee has given him the best results, with Emily Henderson next.

Jacob H. Weaver, Greenland, Pa., says: "We have experienced more or less trouble with the variety under consideration coming striped. At the present time it is confined to a few plants which came from seed dropped from last year's crop. Up to the present the flowers from the seed sown has shown no signs of stripes." He does not use the Blanche Ferry exclusively. With him the Emily Henderson far exceeds the Blanche Burpee, and these are the only two whites he has tried as yet.

Elmer J. Weaver, Bird-in-Hand, Pa., says: "About April 20 a portion of our sweet peas began touching the glass, which was removed, thus allowing the peas to grow through the roof. At the present time they are so badly striped, standards and all, that they do not resemble Blanche Ferry in any way. All the remainder of this variety which are growing under glass at present are true to color, not a plant bearing striped flowers. Last year they grew true to color. Cannot account for it, as one would think removing the glass would tend to bring them true." Up to date Mr. E. J. Weaver has no variety as suitable as Blanche Ferry for an all round pink. "Katherine Tracy," he says, "has certainly a more delicate and beautiful color, and also comes true, but is rather a shy bloomer, many of the first buds turning yellow and dropping off. But when it gets well started it makes fine salable flowers. Emily Henderson is the best white for forcing, though Blanche Burpee may make a few more flowers, but of a much inferior quality and shorter, weaker stems."

In Tennessee, if the seeds are sown about the middle of August, they should be in



DRACAENA GODSEFFIANA.



NELUMBIUM SPECIOSUM IN FAIRMOUNT PARK, PHILADELPHIA. (SEE PAGE 293.)

bloom not later than February 1. A temperature of 55° at night will suit them. The red spider is the greatest enemy of these plants; well directed heavy syringing is the best remedy for this pest.

E. L.

NOTES AND COMMENTS.

There are at least two ways to make use of sulphur in greenhouses. One is after we get a bad dose of mildew, and the other is before—as a preventive. I prefer the latter method. I am reminded, also, that there are different ways of applying this useful fungicide. Whoever applies sulphur for the first time invariably holds the delivery pipe of the bellows close down on the plants, with the result that the material is applied in streaks, which has a very careless look and is not so effective as if the operator held the nose of the machine somewhat "tip-tilted" or at a slight elevation, and in this way the atmosphere in the house is more uniformly filled and the flowers of sulphur more evenly distributed over the plants.

During the recent almost continuous rainy weather our sulphur became damp and would not distribute with any degree of satisfaction. C. A. Schmitt asked if air slacked lime would do any injury if mixed with the sulphur, the object being to bring about a possible drying process and consequent better distribution; and thinking it would not do any injury we agreed to the experiment. He proceeded to mix

the lime and sulphur together in equal proportions in bulk, when he found that just as soon as the two substances came in contact a very perceptible heat was generated. It soon, however, passed away, and on referring the matter to Prof. Wm. Frear, of State College, Pennsylvania, he said: "I have never observed any chemical action between air slacked lime and flowers of sulphur. It is entirely possible that the reaction you observed and the brief heating was caused by the moisture, which taken in the flowers of sulphur in sufficient abundance to prevent its being easily distributed by the bellows was sufficient to further slack the caustic lime. This would account for the heating of a brief duration. In that case, the slacked lime would simply dilute the sulphur and would not prevent its action. I have carefully examined chemical literature and find no mention of any action of finely divided sulphur upon ordinary dry, air slacked lime without the intervention of heat.

The question is if it does no injury there is a possibility that it may do some good, as lime in any form, as I understand its qualifications, is a purifier; but whether it will aid or hinder the sulphur as a fungicide, I do not know. Prof. Frear intimates that the combination can do no harm, and I believe if used as a preventive the mixture would be more economical to use, and it certainly aids in its more free distribution by having the two combined;

this applies only, of course, when both separately and in combination they are kept thoroughly dry.

E. L.

TWINE FOR GREENHOUSE USE.

It will soon be time for tying chrysanthemums and the question of twine, although not a matter of very large expense, is like all other small things worth considering.

For many years we used white cotton twine for tying purposes whenever raffia was not suitable but of late we have used a one-ply jute twine and for cheapness and convenience find it the best. Its cost is about 9 cents a pound and at a guess we say one pound is equal in length to ten balls of the white cotton. In fact it is so cheap and convenient that we now use but little raffia. When the plants are tied to vertical strings instead of stakes 3 or 4-ply jute twine will just fill the bill and costs only 5 to 6 cents per pound.

Another little point the neglect of which causes loss of material and waste of time, is starting to use the string from the inside of the ball. The most natural way to most workmen is to loosen the outside end and let the ball roll in the path. This results in tangles and snarls, especially when the ball is nearly used up. If started on the inside the ball will lie where it is put and the string will pull out readily until there is nothing but a thin layer of string left.

X.

GARDENING

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The name of "Marguerite's" plant is *Physalis Francheti* and it may be propagated from seeds or root cuttings.

J. E. DAGER is a horticulturist of attainment and has some very fine specimen trees and shrubs upon his grounds at Toledo, Ohio. Mr. Dager was a recent visitor at Egandale.

PEONIES have been remarkably fine in many sections this year. They are hardy plants that all may grow with little trouble, and they generally make a brilliant display before the roses come into bloom.

RECENT experiments with Röntgen rays made by Mr. Bounier, and described to the Academy of Sciences, Paris, are claimed to show definitely that these rays are favorable to the germination of seeds.

INSPECTION has brought to the knowledge of the Los Angeles County Horticultural Board the fact that a number of new orchards are infested with *Aspidiotus citrinus*. Recent reports also show that *Lacani umolea* is gaining ground east of Ontario and must be checked this season.

We are in receipt of some excellent samples of peony blooms from P. S. Peterson & Son, of the Rose Hill Nursery, Chicago. The eight acres of these plants grown by

Messrs. Peterson in 300 varieties will be at their best during the next two weeks, and those interested are cordially invited to view them any day except Sunday.

A DISEASE which appears to generally affect lemons grown in New South Wales is known as black spot, and precautions are being taken to rigidly exclude it from the adjoining colonies under the new regulations relating to fruit pests. A consignment of fifty cases of lemons plainly marked with the disease was shipped to Melbourne recently from Sydney, and on the usual inspection being made the fruit was not permitted to be removed by the consignee. The whole of the fifty cases were condemned and afterwards destroyed.

EXAMINE your rose bushes and you will probably find that where a leaf is curled up and closed upon itself, a small green worm is waiting its chance to eat into the buds. Crush the leaf between your fingers, or open the leaf and crush the worm. Be quick about it, for worms they are quite lively. Most of the other enemies of the rose may, outdoors, be kept under subjection by a vigorous spraying with a force pump or a hose. With the latter nothing is better to use than the Rain-bow nozzle, as with it any part of the bush may be reached.

THIS is the natural season of blooming for the lily of the valley, a flower as easy to grow as the thistle. Planted in a rather damp soil and slightly shaded situation it soon covers the ground and takes care of itself, spreading so rapidly that all weeds are soon exterminated. Every few years they should be thinned out or they become too crowded to bloom well. The month of August is a good time to do it. The easiest way is to cut out trenches, spade width, the entire length of the bed, leaving rows of the plant about the same width. Fill up the trenches with good rich soil, and each winter put on a few inches of well rotted, fine manure which may remain all summer.

VISITORS to the World's Fair will remember the Wooded Island in Jackson Park, now much more deserving of the title than it was then. The trees, especially the willows, have made wonderful growth, bringing out in fuller relief the purposes of the designers. One of its most attractive features at that time was the rose garden, and under the fostering care of Mr. Fred Kanst this has been so well maintained and developed that the display this season far excels anything of the kind ever seen in or around Chicago. Thousands throng the island daily, and everyone seems to know that the roses are of a very superior quality this year. Mr. Kanst modestly assures us that the gratifying results are largely due to an exceptionally favorable season. While the weather may have had something to do with it, we know that the outcome depended more strictly upon skillful management. And yet, there is no secret about the methods practiced here, and they are essentially the same as are adopted by rose growers in all temperate countries. The beds are covered in autumn to a depth of two or three inches with leaves. This covering is removed in spring, and when the plants have been pruned—an operation performed when the wood buds are beginning to swell—a dressing of cow manure is applied and dug into the soil, taking care to keep as much as possible of it from direct contact with the roots. When

the warm weather comes, and before the flower buds expand, the beds are given a coat of lawn mowings, and this in a general way completes the work. We selected the following as the best varieties for general cultivation: Caroline d'Ardon, rose; Pæonia, red; Baroness Rothschild, rosy pink; Mrs. John Laing, pink; Comtesse de Sereny, silvery pink; Paul Neyron, deep rose; Camille de Rohan, deep crimson; Marshall P. Wilder, rose and carmine; Margaret Dickson, white; General Jacqueminot, bright crimson; Mabel Morrison, white; Jean Liabaud, crimson maroon; Anna de Diesbach, carmine. In another section of the park a very fine effect was produced with Fairy Queen against an extensive bank of shrubbery.

THE WEATHER AND THE CROPS.

GOVERNMENT BULLETIN.

Over the North Atlantic Division the rainfall in May was in excess in all eastern districts; in Maine, the northern portions of New Hampshire and Vermont, and throughout western New York and Pennsylvania, it was below the average. In the South Atlantic Division the rainfall was markedly deficient in Florida, Georgia, South Carolina, and portions of North Carolina; about the average amount fell in Maryland, while an excess was reported over the southern part of Virginia. In the South Central Division the rainfall was deficient in Louisiana, Mississippi, Alabama, and in eastern districts of Tennessee; rain in excess of average reported from Oklahoma, also an excess in Arkansas and western Tennessee. In the North Central Division large excesses are reported in Missouri, Kansas, Illinois and Iowa, and about an average amount elsewhere. In the Western Division the May rainfall was slightly above the average in California, Colorado, Utah and Wyoming, and nearly normal in all other sections.

Excepting in New Jersey, Delaware, Maryland, Kentucky, Tennessee, Mississippi and Arkansas the season has been highly favorable for peaches throughout the entire eastern half of the country. In Georgia, probably the greatest peach-growing state in the Union, the condition is 105, against an average June condition for the last ten years of 61.

In all the New England States, except Rhode Island, the condition of apples is considerably above the June average for the last ten years. In New York it is 5 points above the ten-year average, in North Carolina 8 points above, in Michigan 17 points, in Wisconsin 31 points, in Iowa 8 points, and in Nebraska 13 points. On the other hand the present early indications are less favorable than usual in the following states and to the extent indicated: Rhode Island, 5 points; New Jersey, 4 points; Maryland, 8 points; Virginia, 4 points; Georgia, 3 points; Alabama, 3 points; Arkansas, 13 points; Tennessee, 11 points; West Virginia, 30 points; Kentucky, 12 points; Ohio, 7 points; Indiana, 15 points; Illinois, 6 points; Missouri, 11 points; Kansas, 1 point.

THE SUNFLOWER.

Probably the cultivation of no other plant has, during the last few years, increased so greatly as that of the sunflower. In Russia alone nearly a million acres are annually devoted to its cultivation, while in Germany and other European states it is grown in immense quantities. Some of our farmers think that in

the large, handsome, smiling face of the sunflower they can see that there is money to be made by its cultivation. That there is a good opening to grow sufficient for home consumption seems to be beyond the range of doubt.

The oil is of great value, scarcely inferior to that obtained from the olive; it is of a clear, pale yellow color, limpid, almost odorless and with a pleasant, mild taste. For salads and many other domestic purposes it is equal to, if not superior to, olive oil. It makes excellent soap, of great softness. Sunflower snoop (sunflower soap) is extensively used throughout Germany, Switzerland and Russia. For painting, especially for greens and blues, it is largely employed.

The seeds, roasted and ground, make a good substitute for coffee; they also make demulcent and soothing emulsions. A fine sweet bread is made from the flower. The flowers produce a large amount of honey; they also give a fine yellow dye. The tall, woody stems, when burnt, produce a valuable potash. The pith of the stems may be used in surgery, instead of moxa. The leaves, either fresh or dry, make excellent fodder. By treating the stems like flax, a very fine fibre is produced, nearly as fine as silk.

Poultry, pigeons and small birds are very fond of the seeds. If a head of the ripe seed is suspended near a window in the cold weather it will prove a never-failing source of attraction to many of the small birds. Fowls must not be overfed with the seeds, or they will put on too much fat and reduce egg production, but given in moderation the seeds will, during the winter, answer as well as animal food and assist in producing early eggs.

When mixed with other food horses and cattle take to the seeds readily. One pint of seed given to a horse per night produces good effects. Pigs fatten very quickly on seed alone.

When the seed is used in the manufacturing of oil the refuse makes excellent oil cake for fattening cattle, and for this purpose is used largely in Russia, Holland, Sweden, Denmark, and also in England, where it is regarded as the best obtainable food. It is said to be superior to rape or hemp seed in its flesh producing properties, and one German farmer reports that he increased the flesh of an ox two pounds a day by feeding him on sunflower cake. An increased milk supply is said to be produced when fed to cows.

The growth of the plant in favorable soils is very rapid, and its absorbing and exhaling power very large. It is, therefore, suitable for growing around unhealthy low localities. A good-sized plant is said by Lacoppidan to exhale one-half pound of water during a hot day.

The sunflower is very exhausting to soils. Although it will grow in many kinds of land, the best results are obtained from that of a deep calcareous nature. Old mortar makes an excellent manure for it. Open, porous land is infinitely better than a close, compacted soil. Sandy or stony soils require to be heavily manured. The impoverishment of the soil by its culture can be remedied greatly by burning the stalks and spreading the ashes over the surface, and the land could, of course, be kept in good heart by a liberal use of bone dust, blood manure, guano or other artificial fertilizer. In Russia, if the stalks and leaves are left in the land as a manure, no further fertilizer is needed for some half dozen years.

In good land and in ordinary seasons the plants require no artificial watering, but irrigation is necessary sometimes.

There are several varieties of the sun-

flower. The white-seeded one is said to produce the most oil, but the large black-seeded kind, called the Russian, is the best for poultry and cattle feeding. In Europe a dwarf species, named *Helianthus Indicus*, is reputed to be the most profitable for general cultivation.

All the commercial kinds of sunflowers are annuals, and attain maturity in about five months from the time of sowing the seed. Six pounds of seed will sow an acre. From September to early November is the best time for sowing; the exact time must be governed by the locality, whether an early or late one. The season must also be taken into account. Directly all fear of frost has vanished, then sow the seed. Three feet by three feet is a good distance for plants of the larger growing kind to stand, but the dwarf varieties may be grown closer. The hoe or scarifier must be kept going between the plants to destroy weeds and keep the soil loose.

When the leaves of the plant are dry the seeds are usually ripe, and the heads fit to gather. If the seeds are allowed to get too ripe the wind will shake the seed out. Birds may do considerable damage, and in removing the heads a quantity of seed will drop.

The heads must not be placed in heaps, or they will soon rot; neither should they be put in a close building, but in a good airy shed, like that used for curing leaf tobacco. When a small quantity only is grown the seeds may be readily taken out of the heads, or they may be threshed out and then screened through a fan mill. If it is intended to keep the seeds for a time, whether in the husk or after being cleaned, it is imperative that they be thoroughly dry, or they will soon become mouldy and spoil.

An acre of plants well grown will produce up to fifty bushels of seed; each bushel will yield a gallon of oil, and 1500 pounds of oil cake may be obtained from the acre. If the stalks are burnt half a ton of potash will be produced.

Wheat succeeds splendidly after a crop of sunflower. It is stated that locusts will not touch the growing plant, and cattle do not care very much about it.

At present there is no great demand for sunflower seed, but if it could be produced pretty cheaply, so that it would compete with maize and other poultry foods it would become largely in demand. Its value is becoming more and more known daily. Our farmers should commence the cultivation of the sunflower by first growing a little for home use.—*Queenslander*.

MARION FRUIT GROWERS' ASSOCIATION, MARION, ILLS.—This society has been organized by the election of A. M. Townsend, president; Robert Adams, vice-president; Argus J. Barter, secretary.

CHARLESTOWN CHRYSANTHEMUM ASSOCIATION, CHARLESTOWN, O.—The Charlestown Chrysanthemum Association offers suitable first and second premiums to be awarded at their chrysanthemum show as follows: Best collection, best four plants, best single plant, any color; best plant with largest blossoms, best os'rich plume, any color; best plant white, best plant yellow, best plant red, best plant pink, best plant grown by girl under 18, best plant grown by boy under 18, best standard plant grown by gentleman, best single plant, quality to rule; best standard plant not less than four feet high, best bouquet; also several special premiums have been offered.



LOUIS C. ELSON.

WORKERS IN HORTICULTURE, XI.

Professor Louis C. Elson, of the New England Conservatory of Music, of Boston, is a student not only of music but of flowers. He is very popular among the floriculturists of New York, Boston and Philadelphia, most of whom enjoy his personal acquaintance. Prof. Elson is a fluent speaker and recently won very high encomiums for his address before the New York Florists' Club, upon the occasion of the first annual "Ladies Night," when he spoke upon the relation of flowers and music. He has delved deep into both horticultural and musical lore and to exemplify the meaning of his words he sang the flower songs of many peoples and many ages. The harvest and vintage songs of Biblical times, the floral language of England centuries ago, the Christmas carols and many other illustrations were given to show how the two subjects, flowers and music, have intertwined in history, and that mankind has always been sensitive to this peculiar connection. Wordsworth, the lecturer said, was above all, the florists' poet, and he sang Wordsworth's lines, "A host of golden daffodils," to music composed by himself. "Thou'rt like unto a flower," he said, has been set to music more times than any other lines in the whole realm of poetry. The subject of the national flower, the harmony existing among those in horticulture and other interesting points were touched upon by Prof. Elson in his inimitable way in this unique entertainment.

Fruits and Vegetables.

SUITABLE MANURE FOR FRUITS.

The Western New York Horticultural Society recently listened to the following discourse upon "Suitable Manure for Fruits," by Prof. H. E. Van Deman, of Parksley, Va.:

It may be well to say at the outset that I am not an agricultural or analytical chemist, nor do I make any pretensions to being skilled in the intricacies of the science of soil physics. It is from the point of the fruit grower who is seeking for better ways of getting at an understanding of his business, that I would wish to present some thoughts upon the subject of suitable manures for fruits. They are by no means new to most people, and especially to you, who are foremost in your calling, that is, the tilling of the soil and all connected therewith. But I may be able to emphasize some of the simplest principles or the leading points

which it is certain we can not understand too well.

Perhaps there is very little difference of opinion among all those who work the soil for a living as to the general need of enriching it for the profitable production of crops. While the ordinary farmer very plainly sees the absolute necessity each year and the almost immediate response of his crops to the application of suitable manures, the fruit grower is none the less in need of such kinds as are suitable to the wants of his trees, vines and plants.

The agricultural chemist and the practical every-day farmer and fruit grower have both separately and jointly studied, experimented and worked out the problem of the composition of various soils, and when, what and how to apply manures and fertilizers to the best advantage, until they are fairly well understood by the most advanced in each of their relative lines.

But there is yet room for a more general knowledge of the entire subject. Every one who deals with that most mysterious substance, the soil, is often at his wits' end to know what is best to do with it, because it is of all possible shades of variation, as to its constituent parts, mechanical conditions, climatic affections and the contour of its surface.

He has tried this and that, sometimes succeeding, and perhaps oftener failing of the results he had hoped to attain. Allowing for all the innumerable variations of climate, rainfall and other contingencies, there are certain quite well defined principles to be observed and relied upon, and lines of action that are usually safe to follow.

Let us look, at this time, into those things which pertain more especially to the fruit grower. Of what are his fruits composed? Which are the manurial elements that best serve his purposes? How, when and in what forms should he apply them?

According to those who have analyzed the various kinds of fruits, they contain the following proportions of water and the several manurial elements:

PARTIAL ANALYSIS OF FRESH FRUITS.

	Water.	Nitrogen.	Ph. acid.	Potash.
Apples	85.30	.13	.01	.19
Pears	83.92	.09	.03	.08
Peaches	87.85	.05	.05	.24
Prunes	77.38	.16	.07	.31
Cherries	86.19	.18	.06	.20
Grapes	83.00	.16	.09	.27
Blackberries . .	88.91	.15	.09	.20
Raspberries . .	81.82	.15	.48	.35
Strawberries . .	90.84	.15	.11	.30
Oranges (Fla.) .	87.71	.12	.08	.48
Chestnuts, native	40.00	1.18	.39	.63

It is therefore to be noted from the above table that they are composed of water in a very large degree, with certain amounts of the three chief elements of all manures, which are nitrogen, phosphoric acid and potash. Not only do the fruits contain these three important things, but the leaves, wood and roots of the trees and plants bearing them contain more or less of them. Moreover, they act in a most positive and invigorating manner upon the entire system of all growing vegetation, although in different degrees and in accordance with their different requirements. They are absolutely indispensable to the growth of vegetation.

There are other elements and chemical compounds which are essential to plant life and development, and in most soils they are found in available forms and in sufficient quantities for ordinary crops. The application of lime is often attended with good results, especially if there is an excess of decaying vegetable matter in the soil. Most of our tillable soils have a large natural content of phosphoric acid

and potash, in many cases seemingly inexhaustible, but largely in such forms as to be available only under the most judicious treatment, after that part has been consumed by repeated cropping which nature made available in what we call her virgin soils. Nitrogen being the most transitory and easiest appropriated, is soonest exhausted in nearly all cases; but fortunately there are means ready at hand of drawing upon the inexhaustible supply in the air. But to know what are the special requirements of the several fruit crops and how to best meet them, is one of the problems that every fruit grower should seek with all his diligence to understand as fully as possible.

NITROGEN AND ITS EFFECTS ON FRUITS.

It has been fully demonstrated over and over again that nitrogen has a remarkably invigorating effect on vegetation, especially in causing a leafy, succulent growth. It is just what the farmer needs in large supply, who grows hay and other forage crops. But the fruit grower should use great caution in the application of nitrogenous manures. If unleached, they are apt to contain a considerable proportion of nitrogen and may cause too rank a growth of wood, vine or leaf. Especially is this true as regards the grape and strawberry. Nitrogen also prolongs the period of vegetation. It makes fruits later in ripening than they would have been if a less amount of it had been available in the soil. Consequently they lack color in most cases. This is especially true of winter apples.

An over supply of nitrogen also makes fruits softer and poorer in quality than if a normal amount were present. It is possible, and not a very uncommon case to have strawberries seriously damaged by its injudicious use. The berries become so soft as to bruise at the least handling, and although large and showy in the field, are wilted and poor looking in the market. A normally firm variety of strawberry may be made soft by too much nitrogen, and perhaps unjustly condemned. The same is true of other kinds of berries, peaches and other fruits, and in variable degrees. But it must not be thought that nitrogen is not needed on the fruit farm, for it certainly is of great benefit when used in proper proportion to other manurial elements. When a bearing fruit tree is not making an average of a foot of growth each year on its terminal branches, and the leaves do not look dark and healthy, it is probable that there is a lack of nitrogen in the soil. There are various sources of nitrogen for the fruit-grower's use, the cheapest of which in most cases is, perhaps, the air. All the leguminous crops have the peculiar ability of gathering or taking in nitrogen through their leaves and storing it in their structures in organic form. Crimson clover and cow peas are about the best of all of them for the fruit growers' use. They may be grown even in bearing orchards with very little obstruction to the cultivation that should, as a common practice, begin in early spring and be continued at least until the growth is well begun. In June cow peas may be sown broadcast, drilled or dropped in hills, a bushel per acre, and if either of the last two methods are used, cultivated until they are too large for further working. An early kind, such as the common black one, if planted by the middle of June, will mature or come near to that stage before frost as far north as southern New York. Crimson clover, as is now quite generally known, may be sown more than a month later, and will cover the ground with a carpet of green all

winter and mature early the next season, or it may be plowed under at any time in the spring. The velvet bean is a more lately introduced nitrogen collector that is proving of the most useful character, and behaves much like the cow pea.

All these and other similar crops are of the highest value to the fruit grower if plowed under or worked into the soil by disc harrows. Over one-half of their manurial value is in their roots and therefore already in the ground; but the additional manurial value of the tops is not the only benefit, for they make humus, which is an important factor in all cultivated soils. Nitrogen may also be added to the soil by means of various organic substances, such as dried blood, tankage, dried fish and cotton seed meal. Also in inorganic forms, such as sulphate of ammonia nitrate of soda, etc. They are soluble in water and become effective upon plant growth within a very short time if applied in the growing season.

PHOSPHORIC ACID AND ITS SOURCE.

Phosphorus is a mineral which becomes in the plant a subtle and constant accompaniment of life, and is found chiefly in the most highly organized forms. United with hydrogen and oxygen it forms phosphoric acid, in which form it enters plants and causes them to grow luxuriantly, and insures healthful and robust proportions. It exists in the protoplasm of the organic cell. Seeds contain it in some degree, and the nerves and bones of animals more largely. It is indestructible by fire and is always found in the ashes of plants. In fact, this is one of its most available forms, for the building up or invigoration of succeeding plants. Fruits contain it especially in their seeds and it is necessary for the fruit grower to know how to make available the hidden stores of nature in the soil and to be able to add to them when necessary, and in cheap form that which is needed. Tillage may be said to be one of the most potent factors in this work. It conserves the moisture of the soil, which is one of the agents in the dissolution of certain forms of phosphates, especially the super-phosphates, which consist chiefly of soluble forms of phosphoric acid. A hard and compact soil cannot contain nearly so much water as one which is loose and porous, just as a flint rock will absorb less water than a brick, or a ball of clay more than a brick, or a sponge more than all of them. The finer the soil is pulverized and the more humus there is in it to give it porosity without making it too loose, the more moisture it will hold. Then, we must keep the top thoroughly and frequently stirred to prevent the escape of the water into the air, except through the leaves of the growing crops. But the soil must not be wet; it must not be water-soaked. That would shut out the air, and that is just as necessary as the moisture. Hence we must have our fruit soils, as well as all others, underdrained either naturally or artificially. The most of them with proper plowing and some times subsoiling, and with thorough surface treatment, are quite good enough without underdraining.

But there will come a time with every soil when additional supplies of phosphoric acid will be very helpful and profitable. The chief sources of phosphoric acid are animal bone and phosphate rock, the latter being only the fossilized bones of prehistoric animals or their residue, mixed with extraneous mineral matter. The finer either of these substances is ground the better, that is, the sooner and more readily their manurial value may be felt by the trees or plants to which they are

applied. Mechanical pulverizing, if supplemented by treatment with sulphuric acid, or by steaming or boiling, in case of raw bone, will add to their availability. Bone black and bone ash are less valuable preparations of bone, because they are less available and minus the nitrogen which was driven off by the heat used in their preparation. Thomas or basic slag, which is a residue from the smelting of certain iron ores is becoming quite popular.

POTASH, THE BACK BONE.

The back-bone of all fruit manures has been truly said to be potash. It gives color and solidity and good flavor to all kinds of fruits. At least, these characters are found to invariably follow the use, or presence of potash in the soil. Its action upon all parts of the tree, plant or vine is highly beneficial. It seems to give the whole structure an appearance of vigor, productiveness, stability and beauty. We may not know just how it acts upon the plant tree or fruit, to make them vigorous, beautiful or well flavored, but that it does it we do certainly know. It is like meat to the hungry day-laborer, like bread to the nursing mother, or like pure air and freedom to the humming bird. Strength, productiveness and beauty seem to follow its application to the soil.

There are in many soils, deposited by nature, quantities sufficient to last for many successive crops, but the available amounts will become exhausted in time, and then we must resort to means of replenishing. Cultivation and deeprooted plants, like red clover, will by degrees make available or unlock the stores of nature, by dissolving and bringing from the subsoil that which was otherwise unavailable. Water does its part of the work, too. In a dry soil or a droughty season it is impossible for the potash, or for that matter, for any other manurial elements to become soluble and in condition to be absorbed by the rootlets. They are as powerless to avail themselves of the food within their reach as a horse would be to eat the food in his box when he was muzzled.

As to the sources of potash, aside from that which may be had in wood ashes and in stable and farm manures, they are all found in the several forms of German potash salts. They are all soluble in water and quite available. What is known as muriate of potash is perhaps the cheapest form in which to buy potash. As it contains about fifty per cent of actual potash, and is therefore much more concentrated and less bulky and weighty to handle, there is a decided saving. Sulphate of potash is another form of about the same content of potash and has a better effect on some crops than muriate, but for fruits the muriate is very suitable. Kainit is a much less concentrated form, being one of the crude products of the German mines. It has only from twelve to fourteen per cent of potash, the rest being chiefly common salt.

CONCENTRATED VS. BULKY MANURES.

The matter of bulky manures is one which the fruit grower as well as the vegetable gardener and ordinary farmer should consider well before buying, or carting long distances, even without other cost. There is very much of the coarse manure that is merely trash and water, with but a slight content of the essentials, nitrogen, phosphoric acid and potash. The straw and other bulky material will be valuable in forming humus as it decays in the soil. But these questions come to the thinking man: "Can I not produce the humus on the farm

cheaper than to get it elsewhere? Could I not get the same amount of manurial constituents contained in coarse manures much cheaper in the form of concentrated commercial fertilizers?" In many cases these questions have been emphatically answered in the affirmative by actual tests on the farm. In other cases they have been differently answered, particularly by vegetable gardeners. As has already been stated, the fruit grower may grow leguminous crops in his orchards, and to some extent, in his vineyards, and berry patches also; thus, not only gaining a large amount of nitrogen at very little cost, but adding the needed humus to the soil. There is really danger of adding too much nitrogen to orchards by the continual growing of leguminous crops, and care should be exercised in this wise.

POTENCY OF POLLEN.

There is one question that we perhaps have not duly considered in connection with the fertility of the soils of our orchards and other fruit plantations or the lack of it, and that is, the potency or non-potency of their pollen. This subject was treated at length and in a most thorough and suggestive manner by Dr. R. C. Kedzie, of Michigan, at the last meeting of the American Pomological Society. There is little doubt that sometimes our trees fail to bear fruit that is perfectly pollinated from the fact the trees or plants are in such a low state of vitality, that it is impossible for them to produce potent pollen. We always aim to have our breeding animals in the very best possible state of vigor, and why should we not treat our fruit trees and plants in the same way? The source of their profit to us lies mainly in their ability to be reproductive. Therefore we should feed them with the best food and plenty of it, if we expect them to set and hold their fruit.

As to the quantities of the different manures or ingredients of suitable compositions to apply to fruit lands, that will greatly depend on what there is already in them in available forms, and what are their structural and physical conditions, and also somewhat upon the kinds of fruits to be grown. In any case the soil should be made rich in potash. Phosphoric acid should also abound in fair proportions, and nitrogen should not be neglected. But care must be taken not to get too much of it. Whatever the chemist or the theorist may say or advise, the soil and the crop must be the final test as to what and how much is best. But it is quite safe to say that, in ordinary soils, and with almost any species or variety of fruit, where nitrogenous crops or stable manures have not been largely used, there will be favorable results from the annual application of the following mixture:

Muriate of potash.....	200 pounds.
Dissolved bone.....	200 "
Nitrate of soda.....	100 "

This may be varied by leaving out the nitrate of soda if nitrogen is applied in the coarse manures. Or, superphosphate from phosphate rock may be used instead of dissolved bone.

Whatever is done or not done, it is unreasonable to expect profitable crops of luscious and highly colored fruit from orchards, vineyards or berry patches that are not intelligently and abundantly fertilized.

O. B. GALUSHA, for many years secretary of the Illinois State Horticultural Society, died today at Peoria, aged 78.

Societies.

MUSKEGON COUNTY HORTICULTURAL SOCIETY, MUSKEGON, MICH.—The county organization will entertain the state society here at the June meeting.

THE ROCK RIVER VALLEY HORTICULTURAL ASSOCIATION, DIXON, ILLS.—This society held a basket picnic on June 9. The afternoon was devoted to a discussion of berry culture, in which Dwight Herrick, of Rochelle, Prof. Hartwell, of Dixon, C. R. Powell, Chas. Hey, Stewart Wilson and others participated.

REDLANDS HORTICULTURAL CLUB, REDLANDS, CAL.—The last meeting of the year was held June 8 and was very largely attended. Prof. C. R. Paine and E. A. Moore read papers upon the question of commercial fertilizers to prevent fruit, particularly oranges, from dropping from trees. Others joined in the discussion and the expression was almost unanimous in favor of the use of such fertilizers.

CONNECTICUT HORTICULTURAL SOCIETY.—We have received the list of premiums offered by the Connecticut Horticultural Society for competition at its exhibitions of 1898 and spring of 1899. The exhibitions will be held in June, July (sweet peas), September, November (chrysanthemums), and March 28, 29 and 30 (flowering bulbs, roses and carnations). Copies of the list may be had on application to the secretary, C. M. Rogers, Beacon street, Hartford, Conn.

AMERICAN ASSOCIATION OF NURSERYMEN.

The twenty-third annual convention of the American Association of Nurserymen was in session at Omaha on June 8 and 9. About 150 members participated in the business and pleasures of the meeting.

The address of the president, Irving Rouse, of Rochester, N. Y., outlined the action of the body as his suggestions were closely followed. He said in part:

"Without the aid of this association the nursery schedule in the Dingley tariff act, of which we are expecting so much, would never have been enacted. The federal law, or San Jose scale act, now before congress, and which we hope will shortly become a law, was only accomplished by the united efforts of this association.

"On March 18 the Dominion houses of parliament passed what is known as the Canadian exclusion act. This act bars out of Canada all nursery stock. It is estimated that at least \$500,000 worth of nursery stock had been sold from the state of New York alone in Canada, a great portion of it at retail on which commissions had already been paid, and not a dollars worth of which could be shipped. A protest was at once lodged at Washington, but the governor-general of Canada refused to suspend all or any part of the law, not even excepting the stock already covered by previous contract.

"In view of this state of affairs it seems very desirable that this association take some action looking to a rescinding of this law or to retaliation; if the former cannot be accomplished, under the federal scale act the secretary of agriculture would have the power to bar Canadian fruit out of the United States for the same reason that Canadians bar our trees, and with more justice. I would suggest that this whole matter be thoroughly discussed and placed in the hands of our legislative committee."

The San Jose scale and legislation

against the pest received much attention and the legislative committee was instructed to use every endeavor to secure the passage of the pending Barlow bill.

The following officers were elected:

President, A. L. Brooke, Topeka, Kan.; vice-president, E. Albertson, Bridgeport, Ind.; secretary, George E. Seager, Rochester, N. Y.; treasurer, Charles H. Yates, Rochester, N. Y.; executive committee, C. L. Watrous, Des Moines, Ia.; R. C. Berckmans, Augusta, Ga.; F. H. Stannard, Ottawa, Kan.

The association voted to meet in Chicago in June, 1899.

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(See review in American Florist, page 1173, April 30, 1898.)

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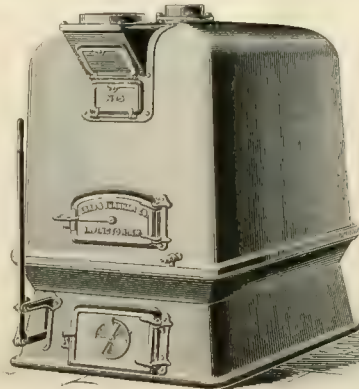
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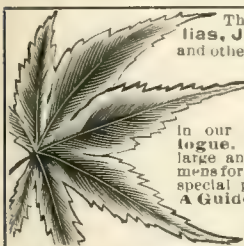
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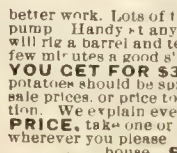
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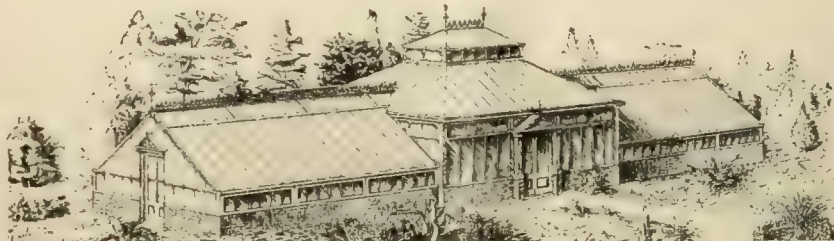
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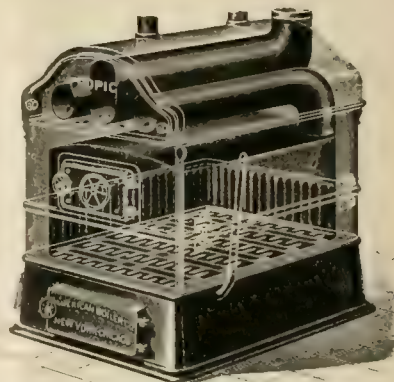
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No. 140.



VIEW IN FAIRMOUNT PARK. PHILADELPHIA

The Flower Garden.

THE WELSH MEMORIAL GROUNDS.

It is with pleasure a view is herewith presented of a pretty scene in the John Welsh Memorial grounds, Fairmount Park, Philadelphia. The term flower bed was about to be used for it, but it is not wholly a bed of flowers, as almost everyone would suppose it was at first sight. The broad circle at the base of the vine covered vase which surmounts the whole is composed of an evergreen, closely sheared, *Retinospora plumosa*—that is

to say, the visible part of it is. On the inside of the circle is planted hemlock spruce, making a solid mass of the whole.

Giving the composition of the bed in detail, next to the walk will be observed a border of turf; succeeding this are circles of *Coleus Verschaffeltii*, *Achyranthes Lindenii*, the yellow coleus, Golden Beder, and in the last row, *Coleus Verschaffeltii* again. The vase is filled mainly with the variegated periwinkle, the one so much used in greenhouses, although the plant in this park has proved itself hardy outdoors all winter. This bed is one of a set somewhat similar which intervenes between one of the entrances

to the park and Memorial Hall. On the right hand corner of the picture in the distance can be discerned the dome of Memorial Hall.

Memorial Hall and Horticultural Hall are two Centennial buildings which were not demolished with the close of that memorable display. The portion of the grounds known as the John Welsh memorial was so named in honor of the late Hon. John Welsh, at one time our minister to England, who always took a deep interest in Fairmount Park, and to whom was due, more perhaps than to any other man, the success of the Centennial itself.

The trees on this portion of the grounds

are not as large as elsewhere in the park, as none are of natural growth. All have been planted since the Centennial year, 1876. The pretty tree shown on the left of the bed is a European plane, a tree which grows well and looks well here. The two on the right are the native linden, *Tilia Americana*, another valuable tree, well fitted for positions where a very large-growing one is required.

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ORNAMENTAL BEDDING.

PART VI.

Count the carpet and design beds all over the land, and you will find the Maltese crosses and stars to be the leaders. A star is easily laid out, yet an old florist told me, speaking of a five-pointed star, that it was an easy matter to get the four points, but the fifth one always gave him trouble and made him nervous; and another old gardener had to ask a car-

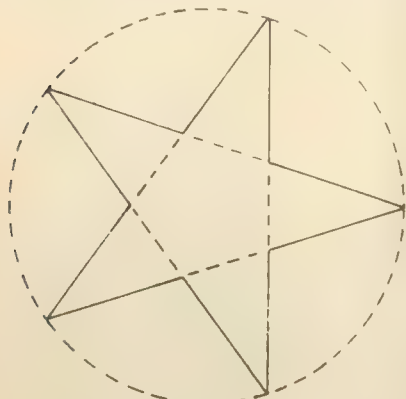


Fig. 26.

penter to make a pattern of strips once, when he was requested to make a star.

For a five-pointed star draw a circle of the desired diameter, divide in five equal parts, set pegs, tie twine between alternate points until you return to the first one as per Fig. 26. Or if you do not

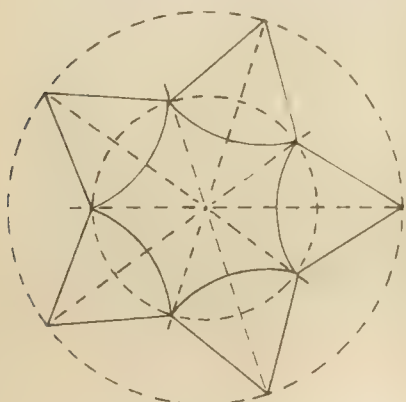


Fig. 27.

want the points so narrow, especially if it is a small bed, draw a smaller concentric circle, mark the inside points on this by stretching the twine from the outside points past the center, and where the twine crosses the smaller circle, put in your pegs. Fig. 27 shows such a star; it also shows a little variation in the planting. The rule given for the Maltese cross about distribution of colors holds good for stars; the points should not be planted in different colors.

The six-pointed star is laid out in much the same way as the cross, being divided

in six parts. Here we can vary the planting, considering the design as two triangles, one laid on top of the other. The

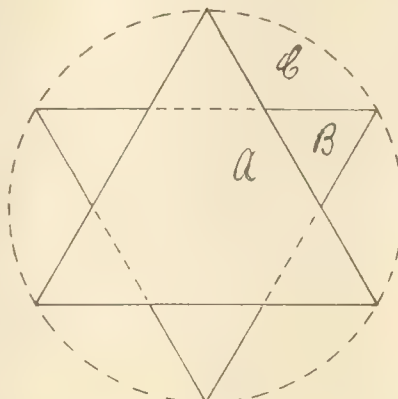


Fig. 28.

stars can be laid out in circular or other beds as part of the design. Fig. 28 put in a circular bed may be planted thus: Triangle *a*, *Coleus Golden Bedder*, bordered with *achyranthes*; points, *b*, *Coleus Black Hero*; *c*, *Santolina incana*, and a border of *Alternanthera paronychioides major* around the whole thing; make the bed altogether twelve feet in diameter, and you have quite an effective bed very easily laid out.

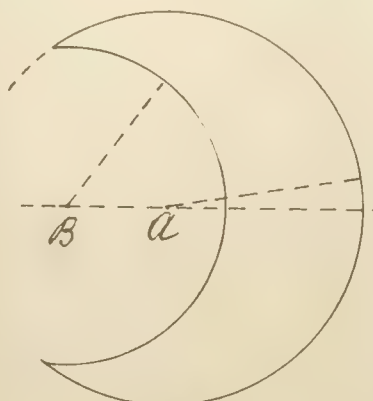


Fig. 29.

The crescent is another popular design from the astral regions, and easily laid out, as Fig. 29 shows; all you want is two centers and from them curves with suitable radius. If the radius from center *b* is five feet and you draw a five-pointed star as Fig. 27 with a radius of three feet six inches with *b* as center, you have a star and a crescent, which look nice when cut out in the lawn.

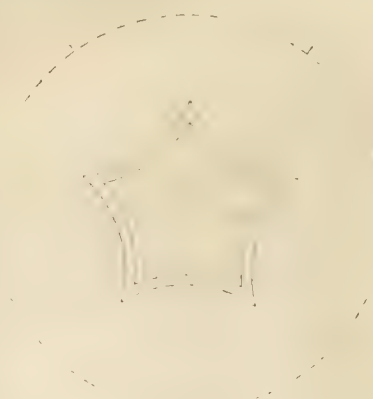


Fig. 30.

Fig. 30 is another easy bed to lay out, and even if only planted with scarlet geraniums, bordered with *Mme. Salleroi*, it is a welcome change from the circles and diamonds. It can also be planted with *coleus*, etc., and it can be improved a little by laying it out as suggested on the two sides; no difficulty in doing it and it looks neat. Suppose the circle in which the center lies is drawn within a radius of ten feet six inches and the sides of the bed are drawn from the five centers with a radius of six feet six inches, it can be planted for about the same price as a ten-foot circle, and it makes more show.

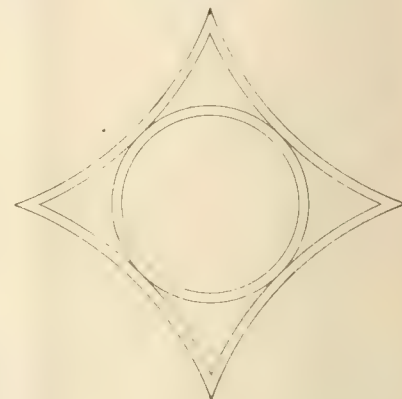


Fig. 31.

Fig. 31 is a design of similar construction. When laid out on a generous scale, say that the circular part is sixteen feet, planted with red French cannas, with a double border of John Good geraniums, the points filled with *Coleus Verschaffeltii*,

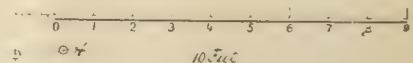
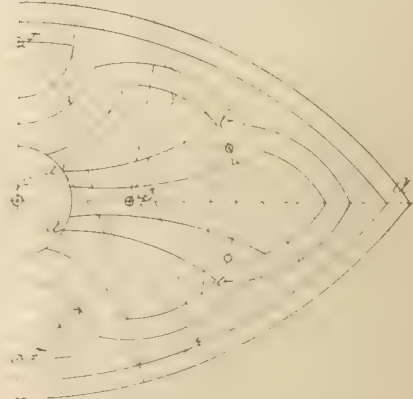
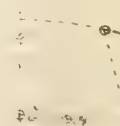


Fig. 32.

bordered with *C. Golden Bedder*; spreading thirty-two feet from point to point, it makes a very bold and effective impression on a large lawn.

While I have now given directions as

concise as possible for the laying out of different forms of beds, I have yet to explain how to "read" a plan or diagram of such a bed. There is, then, three different cases to consider; either the design is drawn according to a scale or the dimensions necessary for the outline of the bed are given. Then we have designs where neither scale nor dimensions are given, especially designs from books. Where a design is drawn to a certain scale, say one-fourth of an inch to a foot it means that each one-fourth inch on paper represents one foot on the ground; consequently one inch is equal to four feet, one-eighth inch to six inches, etc. This scale is also called one-fortyeighth, as this is the proportion in which it is drawn. A carpenter's rule can be used for reading the different measures, but a draughtsman's scale is handier.

When the principal dimensions only are given we have to make a scale for ourselves. If, for instance, in a circle with a radius of six feet we draw a straight line on which we mark the length of the radius and divide this in six equal parts, each of these representing one foot, the end one of these we can divide in two, three, four, six or twelve parts each representing

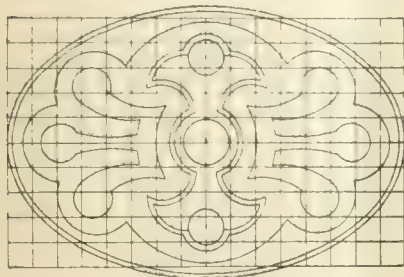


Fig. 33.

respectively six, four, three, two or one inches. Fig. 32 shows such a scale ten feet long, the foot to the left being divided into six parts, each equal to two inches.

When we have a design not drawn to any certain scale and with no dimensions given, we have to study its nature according to the rules given for the planting. Considering that a single row of alternanthera cannot occupy less space than three inches in width without being trimmed hard, and a single row of coleus not less than six inches we have some hints to guide us; these, together with the general nature of the design will give us an idea of the smallest size in which it can be planted, and it will then allow of some variation. When this is decided on we have only to make a suitable scale as above mentioned.

The main thing in reading a design is to find the centers. When it is an original drawing we can generally see where the dividers have perforated the paper by holding it to the light and we can soon select the necessary ones, if a blue print or any other reproduction, we have to find them by construction.

Fig. 32 represents one-half of Fig. 24 drawn to a larger scale. We find that it consists of four symmetrical parts, two of which are shown here, by drawing line *a-b* from end to end and constructing line *c-d* we have it quartered. In this line, *c-d*, we have the centers for the outline of the bed and the inside line of the border. By setting one point of the dividers on the line, about where we judge the center to be, adjusting the other point to *a* and describing the curve from there, we can see how near it is true. If this curve is flatter than the original, our radius is too long and we must move the point on the

line closer towards the curve; if it is rounder than the original, the radius is too short, and we move the dividers further out. When we find the center, *e*, we mark it with a little circle, as shown on the illustration. The corresponding center is on the other side at the same distance from *b*. *B* itself is the center for the circle in the middle. The centers *f* are also found in line *c-d*, while centers *g* are in line *a-b*, one to each side of *b*. The centers *h* for curves *a-b* are found by constructing for one of the curves the perpendicular on the middle, with which construction we are now familiar, and then proceeding as directed for finding center *e*. When found set one point of the dividers in *b*, adjust the other one to *h*, draw a curve across line *c-d* above and below, mark the distance from *h* to line *c-d* (in this case *h-e*) on each side above and below, and that gives you these four corresponding centers. Find the other centers in the same manner, and after this you only have to read them on the scale.

Fig. 33 shows a different way. When there are many centers to find it takes time, and we may not after all get them exactly true; in such cases we can draw auxiliary lines on the diagram, with pegs and twine we can mark them on the ground and then draw the design free-hand. This is Fig. 23 and the lines are drawn 1 foot apart each way. The ellipse is of course laid out on the ground as formerly directed and the axis major and minor help to get the lines true.

When the design is laid out, we are ready for the planting, which for the more complicated designs is quite a difficult task. The plants should be stocky and well hardened; with long, drawn material nobody can do decent work. The alternantheras should be well colored, and those grown in boxes or hotbeds are better than the pot-grown stock. For large plants, as cannas, the spade is the best planting tool, one man lifting the soil and another one setting the plant. For ordinary sized plants the trowel is our mainstay, and a good strong steel trowel is the cheapest in the end. For small plants the fingers can be used if it is a small job and the soil mellow, otherwise, or when the nails are worn to the quick, a small pointed stick or the smallest size of transplanting trowel can be used. In designs drawn as these, the plants must not be planted in the lines, but only to the lines, as these represent the boundary of the different colors; for that reason the best planter should do



Fig. 34.

the outlining, and almost anybody used to planting can do the filling. The design of the bed is planted first, the ground color last. The plants should be set nice and even; if they are not all of one size, the taller ones are planted a little deeper to equalize matters, and it may be necessary to pinch off a few stray shoots that reach above the others.

And now a few words about the planting of echeverias; these little plants give the prettiest effects when they are outlining the bed or parts of the design or both; they should, however, be planted sloping, so that they at the same time raise the bed. How to do this planting is rather a difficult matter to explain.

Fig. 34 shows the operation. The soil is made wet so that it sticks like putty and will "stand" by holding one hand on the line with the desired slope and pressing the soil against it firmly with the other hand in a shape as the dotted line shows, then the echeverias are laid firmly in this and soil pressed on top; after this soil is filled in to make the surface even. If the outline of the bed is planted and raised in this manner, the design cannot of course be laid out until this is done.

By right a carpet bed should look perfect when planted, but that takes many plants and makes the bed expensive, and on this account such beds are generally planted with a little space between the plants. Until the plants are well established and fill the bed, they should be watered well, but from that time they should only receive water when they need it, otherwise they grow too fast and the best colored leaves fall for the shears.

H. HANSEN.

Trees and Shrubs.

DUTIES OF PARK COMMISSIONERS.

The following is an abstract of a paper by Christian Wahl, president of the Milwaukee park commission, read at the recent Minneapolis convention of the Park and Outdoor Art Association:

Large and small public open air spaces in all communities, and especially in crowded cities, are universally recognized to be of the greatest value in maintaining and increasing the health, pleasure and knowledge of all the citizens and in adding to the attractiveness of the city as a place of residence.

They add to the pleasure and health of those who are full in life and vigor by providing for the active forms of outdoor amusement at riding, wheeling, boating, etc., amid attractive surroundings, and to their knowledge by providing an opportunity for the study of plants, animals and birds under the most favorable conditions.

It is of even greater importance that these public recreation grounds add to the health and consequently to the producing capacity as workers in the community, of persons who are weak, tired, nervous, exhausted and sick by providing and making accessible beautiful landscapes and secluded natural retreats made interesting and attractive by an abundance of plants, flowers and birds that may be enjoyed with a feeling of perfect security.

It is the duty of park commissioners to see that as much of all this is provided as the means at their disposal will permit; to see that the various forms of recreation are provided in such a manner that they will not interfere with each other; to see that the needs of those who are worn and tired are not neglected in providing for the demands of those who are vigorous, energetic and aggressive.

It is the duty of park commissioners to seek the most expert advice in solving the problems presented in the selection of park lands and in designing of the various features of a park system. It is not to be expected that such problems can be solved successfully by men whose whole lives have been devoted to other pursuits. It is true that some men who are not professional park designers are so well fitted by nature and so well equipped by travel, study and knowledge of the practical requirements involved in the

efforts give to tens of thousands the profit that may accrue to all citizens from the facts already noted; and the healthy, happy feeling that actual good has been done to so large a part of the inhabitants of the city in which they offi iate.

THREE FINE PYRUSES.

The pyruses made a singularly beautiful display at the Arnold Arboretum this year while they lasted, but severe wind and rain cut their season shorter than usual. *Pyrus betulæfolia*, which is the subject of one of our illustrations, is a comparatively recent acquisition from the mountains near Pekin, China, and is not yet in general cultivation. The flowers are pure white; appearing in clusters before the leaves. The fruit is very small, rusty brown, resembling a Seckel pear in color. Apart from its good qualities as an ornamental tree, Mr. Dawson advocates it as a stock for pear grafting, especially valuable on light soils.

Pyrus baccata is the well known berry bearing apple. It is an early bloomer, following close on the cherries. When full grown it makes a shapely tree fifteen to twenty feet high, but it begins to bloom when very young and with its long stalked flowers of good size makes an attractive picture. It comes in innumerable varieties with fruit yellow, red or green. The plant shown in our illustration is a seedling raised by Mr. Dawson and called by him the Hillside variety.

Pyrus spectabilis floribunda Scheideck-*erii* is a novelty received from Spaeth's famous nursery at Berlin a few years ago. It is now about four feet in height and has bloomed every spring for three or four years. Mr. Dawson thinks it is a hybrid between *P. baccata* and *P. spectab-*



PYRUS BETULÆFOLIA.

ilis. The flowers are deep rose and are produced in great abundance. Its dwarf habit would indicate that its maximum height when full grown might be about eight or ten feet.

Another pyrus, of the Japan quince section, worthy of special notice is *Pyrus Japonica pygmea*. The specimen in bloom at the Arboretum is from seed gathered by Prof. Sargent in Japan five years ago.

It has bloomed already three years. The branches are reclining, almost trailing, the flowers clear orange vermillion, and the foliage soft and flexible, superior in many respects to the ordinary type of *Pyrus japonica*.

The Greenhouse.

THE CULTURE OF DENDROBIUMS.

The following is an abstract of an excellent paper read by John Thatcher at the June meeting of the Pennsylvania Horticultural Society at Philadelphia:

These include some of the most useful and beautiful species of orchids in cultivation. By growing about twelve different varieties, one or the other can be had in flower nearly the whole of the year. The general culture of them is easy; no one who owns a warm house should be without a small collection. I will now give the mode of cultivation that I have used for several years, and with the majority of varieties I have always been fairly successful.

To insure success the roots must be in a healthy condition, and to secure this the plants should be repotted every two years, the compost to consist of good, clean, fresh sphagnum and broken crocks, these latter to be about one-half inch in size. Potting is a work that cannot be rushed along, as though you were potting geraniums, but should be done carefully, so as to injure the active roots as little as possible. When the plants are taken out of the pots or baskets all the old material and dead roots should be carefully removed. If pots are used they should be about three parts full of crocks; if baskets are used a few crocks over the bottom will be sufficient, for when hung up they dry out much more quickly than otherwise. Spread a thin layer of compost over the top of the crocks and then spread the roots over the surface, filling in between with compost. When finished the compost should be about one inch above the rim of the pot. One great point is not to use too large a pot or basket. The



PYRUS BACCATA.

proper time to repot is when the young growth is about two inches high, just when the roots are commencing to push out.

After repotting give the plants every encouragement to grow by supplying plenty of heat, moisture and light. Do not give much water till the roots get fairly good hold of the compost. Care must be taken not to let thrip, greenfly or red spider get headway. To keep these down syringe twice a day overhead on bright days and get well under the foliage. Shading, if it is permanent, should be very thin, but if possible do not have a permanent shade. If shaded too heavily the growth is weak, and if given a fair amount of sunshine it is possible to have stems like young bamboo canes. Manure can be applied with advantage to some varieties, but I would not advise its use where only a few plants are grown. If there are trough pipes in the house they may be kept filled with manure water when fire heat is in operation, and much advantage will be derived therefrom. One of the best things I have found for giving a good, healthy, dark green hue to the foliage is fresh slacked lime and soot, two-thirds soot and one-third lime. Scatter the mixture on the paths and under the benches twice a week when the plants are in full growth, and anyone that has not used it will be surprised at the amount of beneficial gas it throws off.

Resting I consider the most important point in dendrobium culture, and many fail to keep their plants in a healthy condition because of neglect in this particular. The majority of dendrobiums, or I should say spring flowering varieties, as soon as growth is finished should be put in a cool, airy house and given plenty of sunshine, gradually withholding water; give only enough to prevent shriveling; the varieties that flower soon after growth is finished I prefer to leave in their growing quarters until the flowers are out. I will now give the six best varieties, to my mind, their season for flowering and the temperature they should be in if possible during the winter months. The varieties I shall name are easy to grow, free flowering and cheap: *D. Phalenopsis Schraderianum* is the king of the dendrobiums. This variety produces its flowers on the top of mature leafy growths; it also throws out spikes from the two and three-year-old growths. Well-grown plants produce two or more flowers on a spike and the color varies from pure white to dark magenta. The flowering season extends from August till November, and if possible this variety should be kept very dry in a temperature of 55° during the resting period.

D. nobile is one of the best and easiest to grow. The blooms are produced on the old growth, in twos and threes, all up the stem. It can be had in flower from the end of December till June, and should be rested in a cool house where the temperature does not fall under 45°. *D. formosum giganteum* is the largest flowering variety among the white kinds. It blooms on the ends of leafy stems in bunches of from three to five as soon as growth is completed. The flowers appear in August and September, and the plant should be wintered in a temperature of 55° and not allowed to get too dry. *D. Dalhousianum* is very sweet scented and requires plenty of head room. When well grown the pseudo bulbs will reach to a height of four or five feet. The flowers are produced in a spray of from six to ten on the leafless growth, usually in April and May. It should be wintered in a

temperature of 55° and kept fairly dry. *D. Wardianum* is a beautiful large-flowering variety and one that should be in every collection. The flowers are produced on the young growth after the leaves have fallen, from January to March. Winter in a temperature of 45° and keep moderately dry. *D. thysiflorum* is the best of the evergreen kinds and one that can be grown in an intermediate house all the year. The flowers are produced in long pendulous racemes, which last about a week in perfection; the color is orange yellow, with white lip. Six additional good varieties will be found in *F. Falconeri*, *D. Hillebrandtii*, *D. macrophyllum*, *D. fimbriatum oculatum*, *D. Devonianum*, and *D. Brymerianum*.

AN EVER-BLOOMING CHRYSANTHEMUM.

Schlegel's ever-blooming white chrysanthemum, as shown in the illustration, was grown by Robert Laurie, gardener to Cornelius Vanderbilt, at Newport, R. I. These flowers measure from four to four and one-half inches in diameter, and are from cuttings put in during the first week in February. The plants have bloomed ten weeks from the time the cuttings were started.

Mr. Laurie has made a trial of these chrysanthemums for the past two years, and says they are of easy culture and can be had in bloom at any season of the year, for once the flowers are removed the plants again branch from the bottom and bloom.

J. J. B.

TREATMENT OF CYCLAMEN BULBS.

ED. GARDENING:—Does it pay to bother with keeping cyclamen bulbs over to the second year, especially the small ones? I had some left over and have a lot of seedlings again this year. Would like to have the opinion of some grower as to the best course to pursue with the old bulbs.

SUBSCRIBER.

AN EXHIBITION GROWER'S ADVICE.

It does not pay to bother the second year with cyclamen bulbs that have been starved or neglected the first season; but if they have not received a check while growing the first year, they will start and make fine plants the second, and produce twice as many flowers as seedlings. They will probably require a larger size of pot than that used for seedlings at the final potting. To get the best result from cyclamen bulbs the second year they must be dried off gradually and ripened until they lose all the old leaves. It will not do to neglect them while they are undergoing the drying-off process; give them a good sunny bench with sufficient water to keep the roots alive and prevent the bulbs from shriveling. About the middle of June it will be time to re-pot them; shake them out of the old soil, being careful to save all the roots that are alive, and transfer to pots two sizes smaller than those in which the plants were previously flowered. They like a good, fibrous mixture to grow in, one-half good



SCHLEGEL'S EVER-BLOOMING CHRYSANTHEMUM.

sod broken up and one-half loam, with a fair allowance of well-rotted cow manure, charcoal and bone flour. The pots should be well drained, as one of the main points in the successful culture of these plants is to preserve the soil in a sweet condition. They will not require much water until they start to make a good growth, but a light syringing night and morning helps them to break away. Shade during the hottest part of the day, and pot on all the plants as they require it. They should be grown in a frame during the summer months, placing them near the glass and throwing the lights off mornings and evenings.

JOHN BARR.

Natick, Mass.

FROM THE COMMERCIAL STANDPOINT.

We do not consider it worth while bothering with old bulbs. If special care is taken good results may be obtained, but I have never found it to pay, as if seed is sown at the proper time and the plants skilfully handled, the young plants will be as a rule far superior to old stock. However, good specimens may be grown from the old bulbs if the inquirer will dry them off gradually, leaving them in the pots and withholding water by degrees until quite dormant, then take the plants—pots and all—to some cool, shady place outdoors, cover them to the depth of about two inches with coarse sand and leave them there for four to six weeks; then take the old bulbs, shake out the soil and re-pot. They should next be placed in a frame, watered sparingly at first and afterward cultivated the same as young stock. This is the old way of thirty or forty years ago, and it is good enough, only that it spreads over two years that which can be accomplished in one.

J. M. KELLER.

Brooklyn, N. Y.

Publications.

BOOKS AND BULLETINS.

SOUTHERN FRUIT AND VEGETABLE SHIPPERS' GUIDE.—By P. M. Kiely.—This is a pamphlet of 155 pages dealing with the crops most desirable from a market grower's standpoint in the south. It contains a large amount of information on the selection for cultivation of the varieties of fruits and vegetables most salable in a mature condition, together with average prices on the various products and directions for shipping and packing. Only a small space is devoted to flowers, the most important of which, in a commercial sense, appears to be the Cape jasmine.

FORTIETH ANNUAL REPORT OF THE MISSOURI HORTICULTURAL SOCIETY.—The latest report of this veteran society, covering its work during the year 1897, comes to hand in the usual attractive form. Details are given of the various meetings held by the society, and many valuable papers and discussions are printed in full. Numerous illustrations, each conveying some useful lesson or suggestion are scattered through its 400 pages. Altogether the society seems to be in a very healthy condition, and the apparent earnestness and diligence of the members merit all the success which has attended their efforts over such a prolonged stretch of time. Much of the utility of the society's work, and consequent value of its report, is due to the untiring zeal of the secretary, L. A. Goodman, of Westport, Mo.

THE ENGLISH TULIP.—Barr & Sons, London, England.—Under this head the Messrs. Barr have printed a series of lectures on the English tulip delivered at the great tulip conference of the Royal National Tulip Society, held at the Royal Botanic Society's Gardens, London, England, May 12, 1897. In view of the interest now taken in the development of the bulb industry in this country, this little pamphlet should be of some considerable importance to the promoters of the enterprise. The subject is divided and treated as follows: "The History and the Properties of the Florist's Tulip," by J. W. Bentley; "Seed and Seedlings of the Florist's Tulip," by Rev. F. D. Horner; and "The Cultivation of the Florist's Tulip," by C. W. Needham.

TRANSACTIONS OF THE ILLINOIS HORTICULTURAL SOCIETY.—The forty-second annual meeting of this society was held at Springfield, Ill., December 28, 29 and 30, 1897, and the present volume contains a full account of the gathering, also of the annual meetings of the Northern Illinois and Southern Illinois horticultural societies. At these meetings many important topics were freely discussed by the ablest authorities of each section, and the record of proceedings as here preserved cannot fail to be of permanent value to every practical horticulturist in the state, and also to many outside its limits. Among the most important features of the book are the select lists of popular fruits which have proved themselves most serviceable in each locality.

YEARBOOK OF THE DEPARTMENT OF AGRICULTURE.—The yearbook of the Department of Agriculture is a mine of information on agriculture and related sciences. In addition to the usual reports of the various divisions, many papers and special reports by experts are spread through its pages, and in most cases these are freely illustrated. The more important of these papers from a purely horticultural standpoint are as follows: "Lawns and Lawn Making," by F. Lamson-Scribner; "Hybrids and their Utilization in Plant Breeding," by Walter T. Swingle and Herbert J. Welber; "Some Interesting Soil Problems," by Milton Whitney; "Additional Notes on Seed Testing," by Gilbert L. Hicks and Sothoron Key; and "Danger of Importing Insect Pests," by L. C. Howard.

NOTES FROM GERMANY.

Hardy perennials are very much in demand, especially for cutting purposes, but only those with relatively large flowers in distinct, pure colors are esteemed. Generally the flower stalks must be long or the flower must be of unusual beauty to cause it to be in demand for cutting. This is the case with *Gentiana cruciata*, the dark blue two inches long, bell-shaped flowers of which I have seen much used in these days for funeral decorations, together with lily of the valley, *Narcissus poeticus* and white lilac. It is but a short time since long stemmed flowers were used for bunches. Some years ago almost all flowers were set upon wire but now nobody will buy bouquets with wired flowers.

Not until recently has there been any demand for potted plants and a great many gardeners cultivated flowering plants only for the purpose of cutting the blooms. The enlarged importation of cut flowers from the south of France and north of Italy caused growers to cast about for ways which might advance the interest of the potted plant. Fortunately there

exists here a society for the promotion of plant culture among children. This society gives young plants every spring to children in the schools. In the autumn the plants are brought together and the best cultivated ones are distinguished by premiums. Last year 5,895 pot plants were distributed in thirty-seven schools. This year forty-two schools received over 6,000 plants which will be brought together in September for a large exhibition, the first of this character ever held. The plants are only given to the children of the poorer classes and are given especially to the girls. A large proportion of the plants are supplied free by the gardeners who calculate that the work the society is doing will bring them handsome reward in later years. The plants most distributed are pelargoniums, geraniums and fuchsias. During the summer each child will be given a larger pot and the earth necessary for transplanting.

Mineral manures are being used more and more by nurseries as well as by amateurs. The most valued are the so called highly concentrated feeding salts, the nitrate of potash and phosphoric potash. A very good way to make use of these is to water the young plants for several weeks with a solution of one gram of the nitrate of potash to 1000 grams of water. At first the plants are watered once a week with the solution. Then they are watered with it twice a week and finally every day. From this manuring the plants grow very vigorously. When they are in the most rapid stage of their development they receive twice or three times during a week a solution of two-thirds of a gram of phosphoric potash in 1000 grams of water, but they get no more of the nitrate. The result is that in a few days the development of leaves is almost entirely stopped. Then flower buds begin to appear in great numbers. This method of cultivation is useful especially for fuchsias, dahlias and pelargoniums. A mixture of nitrate of potash and phosphoric potash in equal quantities is found to be the best manure for fruit trees, for shrubs and for vines.

UDO DAMMER.

THE AMATEUR HORTICULTURAL SOCIETY, SPRINGFIELD, MASS.—The annual rose show, June 21 and 22 was, as usual, a great success. Evangelist hall was filled with fine exhibits. Mayor Eldridge, of Chicopee had the largest display, forty-five varieties. He has over 400 bushes including eighty-six varieties, but the recent heavy rains had so damaged many of the blooms that he declined to exhibit them. Mrs. George H. Wells had the only specimen in the hall of the York and Lancaster rose. The only hardy gladioli were exhibited by Mrs. Abbie Perry, who also staged some fine pansies, spiraea, mignonette, Jacq roses and honeysuckle. Wm Goldthwait, of Longmeadow, had handsome peonies, candytuft, sweet-william, gaillardias and three varieties of Canterbury bell. E. H. Barney and C. L. Simonds exhibited some fine lilies and Ald. L. D. Robinson had, among other flowers, some noteworthy pink and white pyrethrums. Other excellent displays were made by E. D. Stock, Mrs. J. W. Shillingford, Mrs. Charles Candrian, Rev. W. T. Hutchins, Mrs. G. D. Cooley, and several others.

GRAND RIVER HORTICULTURAL SOCIETY, GRAND RAPIDS, MICH.—The strawberry meeting of this society was eminently successful as June 21 chanced to find the crop in its prime. There were a number of papers on timely topics.

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THE new *Lilium rubellum* lately exhibited for the first time in England has made a very pleasing impression. It is apparently very free flowering and the plant is said to resemble a slender *L. auratum*. Color a palerose or rosy pink.

THE staminate form of the purplish meadow rue (*Thalictrum purpurascens*), found on dryish soil north of Chicago, makes quite a showy plant when brought into the garden and cultivated. It grows three to four feet high and presents an airy, graceful appearance.

J. W. MANNING's new cut-leaved sumach is a good dwarf tree, and will be still better when grown with a straight trunk. It is a variety of the stag's horn sumach, and possesses the same rambling habit of growth as the parent plant. The elegant, light green, fern-like foliage of the new acquisition renders it very effective.

AN eminent horticulturist writes about the care of lawns as follows: "The constant clipping and raking of lawns tends to impoverish the grass and leaves the roots bare. For this reason it is well to spread a light dressing of loam over the grass, mixing in a little fertilizer. This compost should be carefully applied so as to fill up all crevices and rolled in when the ground is somewhat soft after rain. If this is done about three times annually,

it keeps the lawn in repair and saves the expense of remaking, which is necessary every three years where lawns are neglected."

THERE are two specimens of the Colorado blue spruce under our observation, and both trees are of the same age and subject to the same conditions of climate. Three years ago both were of about the same shade of color throughout. Two years ago six inches of soil was removed from above the roots of one specimen, applying a layer of bone meal nearly a quarter of an inch thick and replacing the soil. This year the tree so treated is "blue" all over, the color penetrating almost to the trunk, while its neglected companion shows the desired hue only at the tips of the growth.

IT WILL not be very long before the Blister beetle will make its appearance and devour the asters and some varieties of the clematis. There are two forms, one black and one gray. They drop quickly to the ground when touched, and the easiest way to catch them is to take a tin pan eight or ten inches in diameter, pour in an inch or so of water and then a little kerosene oil. Hold the pan under the plants and shake them and Mr. Beetle will drop into the oil. This operation should be repeated frequently and early in the morning as soon as the beetles make their appearance, as they breed rapidly and can do considerable damage in a few hours.

CANTERBERRY BELLS make such a brilliant display at this season that some preparation should now be made with a view to having a supply of plants next year. These plants are biennials, varieties of *Campanula Medium*, and the seeds should be sown in July, wintering the plants in a cold frame where the climate is rigorous. The cup-and-saucer forms are perhaps the most showy, and the flowers come white, pink, purple, blue and striped, with the white and pink as the most effective. A plantation of the various colors in mixture is decidedly attractive. The plants bloom but once, and provision should therefore be made to replace them soon after the middle of the present month, especially as they are not in any sense decorative when they cease to bloom.

THE PARK AND OUTDOOR ART ASSOCIATION.

THE second annual convention of this society was in session at the West Hotel, Minneapolis, June 22, 23 and 24. There were nearly fifty members in attendance, including park superintendents, landscape architects and lovers of nature from New York to Salt Lake and from Duluth to New Orleans. In the absence of Pres. J. B. Castleman, of Louisville, Vice-President L. E. Holden, of Cleveland, presided and appointed the following committees:

Auditing—E. J. Parker, Quincy; T. W. Kelsey, New York; Dr. W. W. Folwell, Minneapolis.

Publication—O. C. Simonds, Chicago; J. C. Olmsted, Boston; J. A. Ridgeway, Minneapolis, and Secretary Manning.

Finance—L. E. Holden, Cleveland; E. B. Haskell, Boston; J. H. Patterson, Dayton, Ohio.

Resolutions—Secretary Manning, Lewis Johnson, New Orleans; C. Wahl, Milwaukee.

The several sessions were made noteworthy by the presentation of a number of eminently practical papers by men of wide experience. The social features of

the convention included a reception by Mayor Pratt, of Minneapolis, a reception by the Minneapolis Improvement League, a banquet at the West Hotel, excursions by carriage through the park systems of the Twin Cities, and a trip to St. Anthony park, where the Minnesota State Horticultural Society was in session.

Detroit was selected for the next meeting.

Officers were elected as follows: President, C. M. Loring, Minneapolis; vice-presidents, P. H. A. Balsley, Detroit, W. H. Olmstead, Boston, G. H. Warder, Cincinnati, E. J. Parker, Quincy, Ill., Lewis Johnson, New Orleans, and M. L. Moore, Toledo; secretary, Warren H. Manning, Boston; treasurer, E. B. Haskell, Boston.

PLANTS AND PARASITIC FUNGI.

Professor Edward A. Burt of Middlebury College, Middlebury, Vt., recently lectured before the Massachusetts Horticultural Society upon the subject of "The Resistance of Plants to Parasitic Fungi." The following is an abstract of his remarks:

Fungi are plants with the vegetative body not differentiated into stem and leaves. They do not contain the green grains called chlorophyll and they are propagated by spores. There is of late so much said of the destructive work of parasitic fungi that one must not conclude that all fungi exist only to cause disease or death of plants. When the horticulturist sees his plants ruined by rust, the damping-off fungus, mildew and the like, and realizes that all these troubles are due to fungi, he sees small compensation in the mushrooms he has raised and concludes that fungi could be well spared from the world.

Fungi have an important and a peculiar work in the world's economy. The green plants are constantly converting the inorganic matter of the soil into material for their own use. Only a small part of this material is used as food by animals and is broken up into simpler compounds and returned to the soil.

At the end of the season the unused plant matter remains to accumulate on the ground, and if left untouched, in the form of dead leaves or wood, this matter would be of no value to the soil, and its stores of carbon, nitrogen, etc., could not be used in that form as food for green plants. Decay must take place first. Fungi are the causes of decay and they, in forms ranging from bacteria to mushrooms, attack the decaying vegetable material and make prompt return to the soil of the plant and animal remains which would otherwise be withheld from it.

While most fungi are saprophytes and have to do only with dead organic matter, still many are found with living organisms, especially the higher plants. In some cases the higher plant suffers by the contact and then we apply the term parasitic to the fungus; in other cases the higher plant, or even both organisms, gain by the association, which is then called symbiotic. As to the latter relation, it has long been known that leguminous crops increase the nitrogenous matter in the soil and so are of advantage in the rotation of crops. The nitrogen in these compounds is from the air circulating through the soil, and it is only within a dozen years that it has been established that the fixation of the nitrogen in these compounds is due to the presence in the soil of fungi of a low order.

At the points where the fungi touch the leguminous roots small tubercles form, yielding nitrogenous matter to the roots, and appear to receive starch compounds in return. This is probably one of the greatest discoveries of the century. There are also indications that other plants and some trees, as the *Coniferae*, growing in a soil largely composed of humus, and which are deficient in root hairs, are clothed instead with a fungus growth of mycorrhiza. Evidently the fungus supplies food derived from the living plant.

We now turn our attention to fungi in their injurious relations to plants. Parasitic fungi are those which draw their nutriment from living plants, by penetrating their tissues. Parasitism depends on the ability of the fungus to maintain its existence on the host and on the inability of the latter to repel the invasion. The spore of an obligate parasite must fall on a suitable species, and then germinate on and throw out a germ-tube to penetrate the host. And this must be done before the small amount of food substance in the spore is exhausted. This is a very critical period, and many of the spores do not survive it. Then after germination too dry an atmosphere will kill the parasite. An equally fatal result follows if the delicate germ-tube has to creep over a surface coated with poisonous salts or other fungicides; this is the philosophy of spraying for fungi as now practiced in horticulture. Then the fungus must be able to penetrate the defensive structures on the outside of the host, and must maintain its existence from food derived from the living food.

The nature of the attack made by fungi against each surface of the host, and the resistance encountered, may be considered with advantage in connection with some common diseases which have been best studied. Fungi which attack the roots of some plants gain an entrance through the soft structure of the tips of the rootlets, or by passing by way of the root hairs through the harder parts of the root. The fungus causing the club root of the cabbage, turnip, etc., causes the leaves to wilt and become yellow in from three to five weeks, and the characteristic swellings may then be found on the roots. This disease is especially troublesome to truck farmers, because they do not practice a long period rotation of crops. Parts of infected roots are left in the ground and the spores liberated by their decay live several years, and so infect the crops planted the following season. Air-slaked stone lime is an effective preventive of club root. From 75 to 150 bushels per acre should be spread on the ground in the fall and not turned under until spring. Applications should be made every other year to severely clubbed land on which turnips or cabbages are grown yearly. Little is known of the resistance which plants offer to this disease. One of the *Cruciferae* which is most susceptible to this disease seems to escape extermination because its seeds are so widely distributed that not all fall in an infested seedbed.

Infection of the root is more often by mycelium, which creeps from root to root only a few inches below the surface of the ground. The stem of herbaceous plants and the leaves and young shoots of woody plants are covered by a layer of cells called the epidermis, the outer wall of which is waterproof and prevents rapid evaporation of moisture from the tissues of the plant. Water vapor is constantly exhaled from the epidermis through openings called stomata. The epidermal

covering withholds from spores on its surface moisture which is necessary for their germination, and in dry weather they generally fail to germinate. A long period of moist weather, however, favors germination and enables the germ tubes to attack the epidermis. In the powdery mildews a cylindrical thread called a hypha, branches and spreads over the surface of the epidermis, and at various points branches push down and gain entrance into the protoplasmic part of the cell. Here the end enlarges. Such branches are called haustoria, and through these the fungus draws its sustenance from the host, and the hyphae remain on the surface, forming the familiar white patches. These powdery mildews are easily destroyed by any substance poisonous to the fungus but not to the plant (such as flowers of sulphur) being dusted over the leaves.

The bacterial brown rot of cruciferous plants is of great interest because the infecting organism so successfully avoids the outer defences of the host. The cabbage has openings along the margins of its leaves, called water pores, from which superfluous moisture escapes and stands in drops along the edges of the leaves. Bacteria which are lodged there simply swim through the pores into the leaf and there spread the disease. Infection also occurs by bites of insects which have been feeding on diseased plants.

The bark of woody stems forms an effectual barrier against parasitic fungi very destructive to wood. When wounds occur which break through the bark, they are repaired by the new growth of cork or of callus and cambium which the tree makes. In deciduous trees we can cover the wound by grafting wax or paint and so diminish the risk of infection. The mycelium of many fungi extends only a short distance beyond the point of infection. This is the case with "spot disease" of leaves. In other diseases the spread may be greater and even cause the death of the whole plant.

Healthy, vigorous plants are less subject to disease than feeble ones. Fully ripened fruit is very subject to rot. Tuleuf states that fungi can frequently penetrate withering plant organs, while they could not infect the fresh living tissue. In some cases a fungus, though well established, may receive such effective resistance as to make headway only when the vital processes of the host are dormant. The fungus parasite of the European larch only makes headway in autumn and winter.

Protracted dull weather is likely to cause an epidemic of fungus diseases, both because it favors the germination of spores and because it weakens the vitality of the host plant. The vital processes of the cells are so lowered that the poison with which the fungus attacks cannot be resisted. Some varieties and species are more resistant than others. In the past cultivators have thought more of productiveness, color, flavor, beauty, etc., and not enough of the abilities of varieties to resist parasitic fungi. Japanese plums, with their greater freedom from the black knot, are well worth the consideration they receive. By careful hybridizing experiments, Europeans have obtained vines capable of resisting phylloxera and downy mildew. Eriksson's researches have shown that there are some varieties of wheat able to resist the most frequent kinds of rust. He has also found that disease is transmitted to the descendants of plants, though hitherto the opposite has been thought to be true.



FRANKLIN KELSEY PHOENIX

WORKERS IN HORTICULTURE, XII.

No man more thoroughly deserves the esteem of his fellow workers than does Franklin K. Phoenix, who is probably the oldest nurseryman in America, having embarked in business at Delavan, Wis., in the spring of 1842. Mr. Phoenix was born in Perry, Genesee county, N. Y., in March, 1825. His parents removed to Wisconsin in March, 1837. After a decade of business activity Mr. Phoenix started a branch nursery at Bloomington, Ill., where he concentrated his efforts from 1854 to 1877. After four years of inactivity he re-embarked in business at Delavan, where he is now completing his fifty-seventh year of horticultural endeavor. In 1850 Mr. Phoenix married Miss M. E. Topping of Darien, Wis. They have four sons and two daughters. The eldest son, Samuel T., served four years with J. C. Vaughan, and is now mining in Utah. The second son, F. S., is the only one to adopt his father's calling as his life's pursuit. He is now proprietor of the big Bloomington nursery started in 1852. Despite the weight of his seventy-three years, Mr. Phoenix is energetically prosecuting business undertakings and enjoys a thriving trade. He handles general nursery stock but makes a specialty of hardy roses grafted on a native stock procured from selected seedlings. He believes this to be the stock of the future for this country. His years of experience have taught him that it has all the merits of the imported stock, with the decided advantages of being hardier and "working" easier.

Fruits and Vegetables.

VEGETABLE NOTES.

In the east we have had a very favorable season for nearly all vegetables. Nights during June were a little cool for squash, corn, melons, lima beans and other tender crops, but peas, celery, onions, potatoes, root crops, and all the brassica family are unusually fine, there having been just the atmospheric conditions most conducive to the well doing of the varieties. With the end of June the

vegetable grower can breathe more freely as most of his land is occupied and judicious watering of moisture loving plants, with frequent cultivation of the soil, and the almost constant use of the hoe to keep weeds in check will be the principal work during July and August.

Celery is one of the most important crops in the vegetable garden and one, in the successful culture and winter storing of which, many excellent gardeners fail. We have had failures ourselves, but have always been able to profit by them and now manage to grow our celery perfectly free from rust and keep it in good condition until the beginning of April. Celery is a moisture loving plant and to have the best success with it, the roots should never be allowed to get thoroughly dry. We always plan to plant our crop where it can be artificially watered in dry weather with a sprinkler which is allowed to revolve several hours in one place until the ground is thoroughly soaked; wetting merely the surface does more harm than good and is a far too common habit. Our early batch of celery planted out early in June is now growing vigorously. We mulch among the plants with spent mushroom manure or rakings from the lawns, both of which are excellent mulching materials. Our latest lot for winter supply is planted about July 10; our favorite varieties here are Boston Market, Giant Pascal and Kalamazoo, the first named keeping in good condition the longest. None of these sorts are used before January, the supply prior to that being from Paris Golden or Golden Self Blanching, White Plume and Pink Plume. The last named kind we like very much and are growing it more largely this season. Paris Golden for early use is probably more extensively grown in the east than all other sorts combined. It can be planted quite late with success. Last season one or two rows set out early in August made excellent heads. In planting celery too much care cannot be taken to lift a good ball with each plant and see that it is thoroughly soaked before setting. Celery so treated will grow right ahead and give satisfaction, which is more than can be expected when there is scarce a vestige of earth adhering to the roots. To have a regular supply of good celery all winter should be the aim of every owner of a vegetable garden. The "How to keep it" is a conundrum which many have been unable to answer to their satisfaction. We have tried lifting and storing it, but have come to the conclusion that to have the best results the celery must be protected and kept where it is grown. We therefore earth our plants up as much as possible and later fill the trenches between the rows and over the plants with leaves or meadow hay of sufficient thickness to exclude frost, boards being nailed together in form of a span roof to lay along the top of the ridges to keep out moisture. This system may not commend itself to commercial growers, but for private establishments we do not know of any better method. Celery kept in this natural way with roots fresh and growing tastes very different from that stored in pits, caves or cellars.

We try each year several new varieties of tomatoes, both under glass and outdoors. Our outdoor crop generally does not amount to much before the middle of July, although we can make pickings a fortnight earlier from plants well started in 6-inch pots before planting out. The varieties grown under glass which have given us the heaviest crops are Sutton's Best-of-All, Eclipse, Frogmore Prolific and Faultless Early. The first three sorts

are of good size; all set very freely and are of a fine color. Faultless Early and Early Essex are good midwinter sorts. The fruit is rather small compared to other kinds, but as they are borne in clusters of from eight to twelve they make up in quantity what they lack in size. None of these indoor sorts have proved of much value outdoors, while our best all-around open air varieties, such as Stone, Perfection and Beauty are of very little value under glass. Most tomato growers, at least on private places, now train their outdoor plants in some way, either to a fence, pole or some other support; the little time required during the season in tying up the plants is more than compensated for by their better appearance and the superior quality of the fruit which can get light and air, which is impossible when the vine is lying on the ground. About the middle of July we make a sowing of tomato seed to grow for our earliest winter crop. These will give ripe fruit by the time the outdoor crop is exhausted; the plants are potted as required and grown outdoors until the end of August when they are transferred to their winter quarters where a night temperature of 55° to 60° is maintained.

For several years we have adopted the old plan of sowing our onion seed in a gentle hotbed, and planting out about April 20. Many commercial growers now adopt this plan exclusively and it has much to commend it. Only a fraction of the seed is required as compared with those sown outdoors, a regular crop is assured, there is no tedious thinning and weeding to be done and far finer bulbs are the result. Our plants are allowed two feet between the rows and are from six to eight inches apart in the rows. Commencing early in July some liquid stimulants are regularly given during the rest of the growing season; once a week after a rainfall, or artificial watering with the sprinkler, the plants are gone over with guano water, sheep manure, or some other liquid fertilizer, changing the food from week to week and increasing the strength of the dose as the bulbs swell. A scattering of special chemical fertilizer between the rows, which can be hoed over afterwards, is also advantageous but must be used with caution. Onions are quite gross feeders but we have seen fine batches looking as if a fire had been over them because of too heavy applications of fertilizer. To grow extra fine onions a copious supply of water, occasional soakings of liquid manure and frequent stirrings of the soil are three things to be attended to. For all-around purposes there is nothing superior to a good strain of Yellow Globe Danvers and Red Wettersfield, both of which are fine keepers. Where an extra large handsome onion is desired, Prizetaker is the one to grow. Two English kinds which give us immense, firm bulbs are Ailsa Craig and Cranston's Excelsior; both these varieties keep well, but they are almost too large for market purposes. W. N. CRAIG.

Taunton, Mass.

THE TEXAS AGRICULTURAL CONGRESS will be in session at College Station, Texas, July 13, 14 and 15. Reduced rates have been secured and a large attendance is anticipated. An elaborate programme has been prepared. The congress will be made the occasion for the meeting of a number of allied societies, among them the Texas State Horticultural Society, State Swine Breeders' Association, etc.

Miscellaneous.

THE JAPANESE NAME FOR THE CRIMSON RAMBLER.

The *Journal des Roses* states that among some plates of Japanese roses (principally wild ones) published in that paper, in 1886, is a plate corresponding exactly to Crimson Rambler. The description is exact as well as the plate and it is no doubt the same rose. The Japanese name is given as Sakoura-Ibara, literally cherry rose.

GRAFTING TOMATOES ON POTATOES.

In a paper read before the Royal Horticultural Society of England, Mr. Neild describes some successful graftings both of tomato on potato and vice versa. The tomatoes on the potato produced a good crop of fruit. It was noted that the potato tubers, however, produced roots where ordinarily eyes are formed. The potatoes grafted on tomato stocks did not grow so freely and produced small green tubers in the axils of the leaves.

FUMIGATING WITH SULPHUR.

Constant advice is given to fumigate houses with sulphur after they are cleared. This is a most excellent thing to do, but before burning the sulphur the hose should be put on and the whole house thoroughly wet down inside, roof and all, reaching every crack and cranny possible. The water absorbs the fumes of the sulphur and carries them into the dirt and so reaches the depths of many cracks that the dry fumes would not reach.

WINTER FORCING IN THE OPEN FIELD.

A bulletin of the Missouri Experiment Station describes a method of forcing asparagus in the open field which has proved very successful.

Ditches were dug between the rows in which 4-inch blocks were laid at the sides on which boards were placed, the ditches being then filled in. Through the passages thus formed steam was forced. As the bottom and sides were formed by earth only the steam readily found its way into the soil, moistening as well as heating it. About one foot of soil was placed over the crown of the plants and the whole covered with six inches of horse manure. The horse manure not only retains the heat but ferments quickly and adds to the heat from the steam. The asparagus was forced during December and January, the best results being during the coldest weather when the thermometer frequently went below zero. The stalks were cut as soon as they reached the surface of the soil and were very fine. It is claimed that one season's growth leaves the forced plants in perfect condition for a second forcing.

The expense was very small. For a plot 25x25 feet, which was run for fifty-eight days, the time of running the steam averaged seventeen minutes daily, and as there were six ditches the average was only three minutes daily for each ditch. The coal consumed, by careful measurement, amounted to \$1.82 in value. The temperature of the beds was not allowed to go much below 60°. This experiment would, if carefully carried out, be quite promising as to hastening the blooming period of hardy flowers and even shrubs.

It is well known that spring bulbs, pæonies, lilacs, etc., are no longer profitable to the average grower for the wholesale market, while if they could be hastened even a few days there would be a good demand with fair prices.

CHEMICAL ANALYSIS OF PLANTS AS AN INDICATION OF FERTILIZERS REQUIRED.

One would naturally suppose that a careful chemical analysis of the plant, roots, stems, leaves and flowers—would be an excellent indication of the relative proportions of lime, phosphorus, potash and nitrogen to be applied as manure. It has been an accepted fact however, among scientists, that such is not the case. Some experiments at Wye, England, noted in the *Gardeners' Chronicle* show the fallacy of this idea very clearly.

Dandelion plants were carefully selected from different soils, washed, dried and analyzed, for lime and phosphoric acid. Lime was found to vary from 12.8 per cent. to 48.8 per cent. of the total ash of the different plants and phosphoric acid varied from 2.5 per cent. to 10 per cent. of the ash.

The conclusion reached is that the analysis if anything, shows more as to the needs of the soil than the requirements of the plants; that is to say, the plant will take an excess of the element in the soil which exists in greatest quantity and most available conditions, and a much less amount of that element which is deficient in quantity or not so available in form.

Analyses of the soil have also been shown to have little value in determining what manures to apply and the grower must depend on experiment with each soil to give him the required information. X.

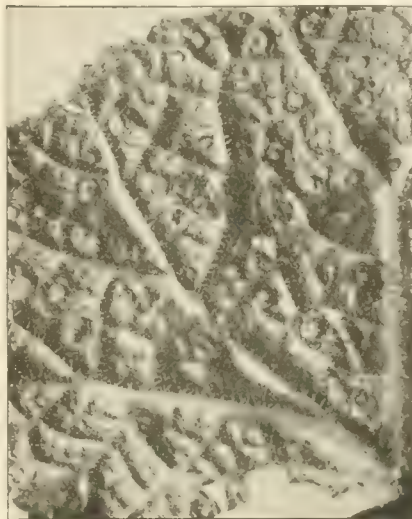
FUNGUS DISEASES OF HOLLYHOCKS.

In 1896 a row of hollyhocks was set in the plant hospital for a study of the diseases that of late years have attacked this plant. During 1897 the plants were sprayed with various compounds, Bordeaux being among the number. The leaf spot caused by the fungus *Cercospora althæina* Sacc. was the first to appear and it increased upon the untreated plants until the close of the season. Upon the sprayed plants it did only a small amount of damage. The leaf spot is quickly recognized by the angular spots, which at first are small and brown, but increase in size and become ashy white in the center with a dark border. The center of the spot sometimes falls away leaving the leaf full of irregular "shot holes," and the foliage thus badly affected drops, leaving the hollyhock stems bare for the lower portion.

There is another fungus disease of the hollyhock that is quite common in some grounds. This is called a leaf blight and is due to *Phyllosticta althæina* Sacc. It differs greatly in its destructive work in the hollyhock from the cercospora above mentioned. Instead of the numerous angular specks and spots the fungus attacks and destroys the whole of the tissue of the area infested and may involve a spot as large as a half dollar and the blighted portion becomes dry and breaks away leaving large holes with a ragged outline. This leaf blight of the hollyhock is checked by spraying with the Bordeaux mixture.

There is a disease of the hollyhock that has proved quite destructive to seedlings in the greenhouse. This appeared in several propagating establishments about

ten years ago, and was so serious that some firms gave up this crop and only within the last year or two are they taking up hollyhocks again. A grower only a short time ago told me that the only successful way for him was to move away from the trouble, that is, he grew his hollyhocks several miles from the old houses and only brought them home to fill orders. This is a valuable, practical



HOLLYHOCK RUST

hint to all who are seriously menaced by destructive fungi.

The fungus in question is an anthracnose due to the fungus *Colletotrichum althæae* South. It attacks the leaves, either the blade or veins, and frequently the leaf stalk is destroyed by it. The stems do not escape and are badly blotched by the fungus. A blackened and shriveled appearance of the hollyhock plant is a suggestion that this fungus is at work. This fungus has never yielded successfully to spraying so far as the writer has observed.

The last fungus disease of the hollyhock to be considered, and the one most to be dreaded, is a genuine rust, due to the fungus *Puccinia malvacearum* Mont. It is easily recognized by the orange blotches upon the leaves and the globular masses of spores of a brown color usually upon the under side of the leaf, but may also appear upon the stem, petiole or even the parts of the flower. From observations made upon it within the past few weeks the rust evidently remains over the winter in the tuft of leaves formed in autumn that cluster close to the ground. The spores produced by these quickly germinate and spread the disease.

As a precaution all the autumn leaves, when rust is found, should be gathered and burned. Spraying with Bordeaux will help to keep the rust in check as experiments at the plant hospital show. The accompanying engraving shows a view of a portion of a rusted hollyhock leaf with all the parts several times magnified. The rust spots are circular.

BYRON D. HALSTED.

FERTILIZER CARTRIDGES.

An ingenuous Frenchman, M. Georges Truffaut, has prepared and placed on the market a very novel method of applying fertilizers to pot plants. The fertilizer is compressed into cartridge shape and cov-

ered with a metallic case, except the bottom, which is not covered. Presumably the fertilizer is in a slowly soluble form. In use the cartridge is pressed into the soil and the fertilizer gradually dissolved by the watering and carried to the roots of the plants.

So far the invention would seem to be, like jadoo, a pleasing and harmless thing enough; but M. Truffaut puts forth some remarkable claims for it. By repeated chemical plant analyses he has succeeded, so he says, in finding the exact fertilizer requirements of a large number of plants and is prepared to furnish cartridges warranted "to just fill the bill" if you will only give him the name of the plant. For instance, the formula for *Asparagus tenuis-inus* is nitrogen, 13.4%; phosphoric acid, 8%; and potash 5.8%, while for pelargoniums it is 8.6% nitrogen, 8.6% phosphoric acid and 8% potash, and so on through a long list. No doubt M. Truffaut's cartridges are very good in their way, but we are compelled to smile audibly at his long list of special formulas.

All of these "horticulture made easy" inventions, remind us of the small boy with the pin hook and the hickory pole and how often his string of trout outweighs that of the dude with the fancy outfit. The moral of this is that the "know how" counts for a great deal more than the "where with." X.

CUTTING OFF SEED PODS.

But few persons know how greatly it benefits a flowering plant to cut off all its decaying flowers instead of permitting them to go to seed. Practice has repeatedly demonstrated that it is a greater tax on a plant to perfect seed than it is to produce its flowers. Both flowering and fruiting are exhaustive processes, the latter, however, is much the greater of the two. A familiar instance may be observed in the case of annuals in pots. If the plants are prevented from flowering their annual nature is dropped and they live on until the next season, or to a later period until flowering is accomplished.

Gardeners who grow plants for exhibition purposes allow of no early flowering. Buds are picked off as they appear. To accomplish its flowering the plant pushes out more growth to bear buds, which it would not do were flowering permitted. Fuchsias when left to themselves flower while yet small plants, hence are often the subject of the disbudding described, so as to have larger specimens of them for exhibition purposes. And out of doors the orchardist does the same with his fruit trees. A newly planted one is not allowed to flower because he knows it cannot sustain both flowers and branches, and he wants the latter the most. When it comes to fruiting the drain on the tree is enormous. Should a weakly fruit tree be permitted not only to flower, but to fruit also, it is almost death to it, and in many cases trees are killed outright by it.

The common silver or white maple furnishes an admirable illustration of what a drain fruiting is upon a tree. Near my house are some half dozen of them, and I have often been greatly interested in watching their behavior in early spring. As is known, this maple flowers early, the buds swelling and bursting very often before the late frosts have altogether disappeared. Sometimes one or more of the trees will have their flowers frozen, while the others, opening a day or two later, escape. From this or some other cause nearly every season finds some in fruit

and some not. It is from this time on that it is interesting to watch them for a period. Those with no seeds on push into leaf and into growth, every day adding to their length of growth. But how different those behave that are bearing seeds. The foliage expands just as it does on the other trees, and casual observers would not know that they are making no growth at all. But it does not; not an inch; all its energies being completely taxed in the perfecting of its seeds. The seeds of this maple are ripe in May and as soon as they drop from the tree mark what a change takes place. The food which the seeds required now goes to the pushing on of wood growth, and out spring the young shoots in all directions. It is one of the best lessons of the kind I have ever observed. The tree alongside which bore no seed will have made perhaps a foot of growth by this time, and this advantage over the other it maintains all through the season.

In flower beds in summer it is the rule to cut off all decaying flowers. Neatness demands this, of course, but aside from this there would be less growth and, of course, less flowers were they permitted to form seeds. In the case of rhododendrons it has come to be a recognized rule with gardeners to look over their plants soon after flowering, cutting off every decayed head to prevent the formation of seed pods. Where this is overlooked there will be less growth made and fewer flower buds formed for the next year. As will be inferred from the above remarks, in the case of young fruit trees it is wrong to allow them to bear heavily. The weakening it causes becomes permanent, and the tree never becomes the vigorous specimen all lovers of trees like to see. It is therefore plain that vigorous growth, flowering and seeding cannot all be had. It then remains for the one who has a case before him to make up his mind which of these three things he wants. Is it growth of plant, flowers or seeds? So far as concerns fruits, even when trees are of fair size, a moderate crop is much better than a heavy one. Branches bearing "like ropes of onions" is reprehensible instead of commendable, yet the statement of such an occurrence is often boastfully made.

STANTON.

Societies.

NEBRASKA HORTICULTURAL SOCIETY.—The executive committee has decided to offer \$1000 in premiums for a display of horticultural products for one week in connection with the Nebraska exhibit at the Trans-Mississippi exposition.

THE KANKAKEE VALLEY HORTICULTURAL SOCIETY, KANKAKEE, ILLS.—The annual Strawberry and Rose Festival was held on the fair grounds June 11. There were large displays and nine premiums were awarded for berries and thirteen for rose exhibits.

NOBLE COUNTY HORTICULTURAL SOCIETY, ALBION, IND.—The subject discussed June 16 was "Strawberries," a dozen papers being read upon the various stages of evolution from "soil" to "shortcake." There was a large exhibition of very fine fruit under the direction of J. C. Grossman, of Wolcottville.

COLUMBUS HORTICULTURAL SOCIETY, COLUMBUS, OHIO.—The last meeting until September was held at the State University on June 25. There were interesting

reports from standing committees and Prof. A. D. Selby, of the Ohio Experiment Station discussed "Can Leaf Curl of the Peach be Controlled?"

WISCONSIN HORTICULTURAL SOCIETY APPELTON, WIS.—Nearly 150 members attended the annual session June 24. The program consisted of a discussion of San Jose scale legislation and the following papers: "What Horticulture Has Done for Southern Wisconsin," George J. Kellogg, of Janesville; "Benefits to Be Derived from a Good Working Local Society," Mrs. J. D. Treleven, secretary of the Omro society; "The Progress and Mission of the Wisconsin Horticulturist," Mrs. Franklin Johnson, of Baraboo.

CONNECTICUT HORTICULTURAL SOCIETY, HARTFORD, CONN.—The summer exhibition, June 20 and 21, was very successful, both in point of attendance and in number and quality of exhibits. W. B. May, gardener for J. J. Goodwin, made a splendid exhibition of strawberries, noteworthy in this class being his British Queen, a late variety new to this country. He also showed some very handsome unnamed sweet peas from seed raised by the California Sweet Pea Company. Robert Patchet, gardener for the Rev. Francis Goodwin, also exhibited a large variety of strawberries, lettuce, sweet peas and cucumbers. Colonel Clayton H. Case made an exhibit of ten varieties of roses. He has upwards of sixty varieties on his grounds in West Hartford. Miss Florence Browne made an admirable display of roses. One of her choicest specimens was a Paul Neyron. Mrs. James R. R. Moore made an exhibit of roses and the daughter of Mrs. Moore, Miss Grace Moore, showed a choice collection of wild flowers. Stephen Delbar, gardener for ex-Governor Morgan G. Bulkeley, showed a collection of roses that was viewed with much interest. Mrs. W. S. Seliger made a very fine exhibit of hardy plants. The features of the display were *Lonicera Sinensis* and variegated *Halleana*. W. E. Wallace showed fifty varieties of roses and had the largest and most varied collection in the hall. He had magnificent Ulrich Brunners and his Mrs. John Laing were exceptionally well grown. He also exhibited Margaret Dickson, white with pale flesh center and the Paul Neyron, one of the largest varieties of rose in cultivation. There were dozens of other good exhibits. A chrysanthemum was presented to each child under 16 years of age, and each one was instructed how to cultivate the plant. The society will award gold, silver and bronze medals to the children exhibiting the best results at the November show.

CATALOGUES RECEIVED.

Gorton & Lidgerwood Co., New York, N. Y., boilers; The Richmond Stove Co., Norwich, Conn., heaters; F. O. Pierce Co., New York, N. Y., mastic; J. H. H. Boyd, Gage, Tenn., tree seed; Frank Brunton & Co., Boston, Mass., plants.

P. S. Peterson & Co., Chicago, Ills., pæonies; H. Henkel, Darmstadt, Germany, seeds and plants; Fairmount Chemical Laboratory, Philadelphia, Pa., weed killer; Pierce, Butler & Pierce Manufacturing Co., Syracuse, N. Y., boilers and radiators; Hubert & Company, Ltd., Guernsey, England, plants; James Vick's Sons, Rochester, N. Y., bulbs.

In a climate as severe as that of Chicago, *Yucca filamentosa* flowers stronger and more freely if protected by means of a box during winter.

Gleanings.

THE largest and oldest nursery in Europe is said to be that of the Messrs. Spaeth, of Rixdorf, Germany. It comprises 700 acres, 680 of which are planted with stock which includes practically all the trees and shrubs which can be grown in that climate. The business was established in 1720 by Christopher Spaeth and has remained in the hands of the Spaeth family and in direct line continuously from father to son through five generations. The annual output of the Spaeth nurseries consists of 500,000 standard fruit trees, 300,000 dwarf fruit trees, 3,000,000 ornamental trees, 6,000,000 shrubs and 500,000 conifers. Between 300 and 400 employees are given work in the nursery. The employees have a sick benefit association with a kindergarten to which sixty children besides those of the employees and officers are admitted, and a restaurant. There is also a library connected with the institution, containing many foreign publications, which are at the disposal of the young gardeners.

It may interest one of our subscribers, who recently made inquiry concerning the currant borer, to learn that the English currant growers are also having such trouble with insect pests as compels them to destroy the bushes in order to get rid of the enemy. A correspondent of the *Gardeners' Magazine* refers to the matter as follows: "It is interesting to note, arising from the grave complaints as to the ravages of this insect pest [the black currant mite] in portions of Kent, that our leading entomological authority, Miss Ormerod, seems to have no palliative to offer to growers other than in absolutely stamping out the plague by total destruction of bush and insect. That is a method of dealing with the pest that few growers on a large scale will care to face, and indeed would be utterly useless if conducted in isolated cases. No possible good could result unless wide areas were compulsorily dealt with, and it really seems, so far as this grave trouble is concerned, that local authorities will have to be granted powers to deal with infested areas just as they now have in the case of cattle diseases. But in this latter case some compensation for destruction of cattle in diseased areas is paid; whereas it will be difficult to adopt such a practice in relation to condemned fruit breadths, as it would be unfair to the general ratepayer or taxpayer. Miss Ormerod thinks that the proper course to take where there are breadths of infested black currant bushes is to grub them out, root and branch, burn them and crop the ground with potatoes or other vegetables or corn, and thus starve the mite out. That is all very well, but in the meantime there must be steps taken to maintain a supply of healthy bushes. How is that to be done? Are there any stocks in the kingdom absolutely free from the mite? If there are, so much the better. But still, if propagated, these stocks must be kept a long way removed from other old ones for a few years; and to that end it seems needful to isolate them right in the midst of corn growing districts, a long way from gardens. Once get the mite into the clean young stocks and nothing would be gained. It seems a pity that the resources of science can furnish no other remedy for a great evil than is to be found in absolute destruction of stock."

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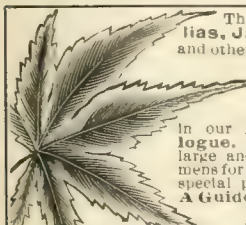
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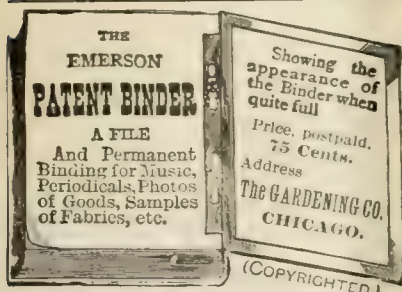
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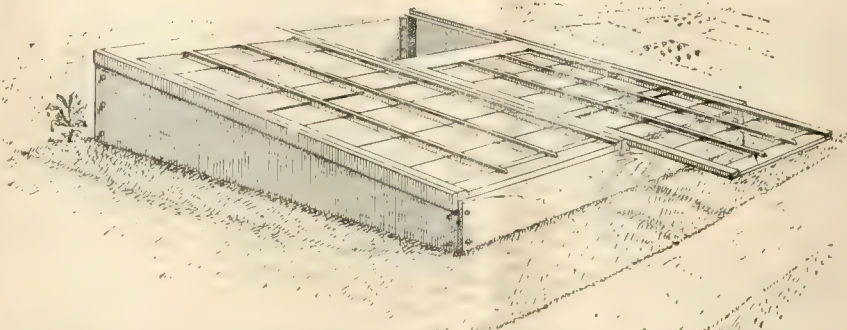
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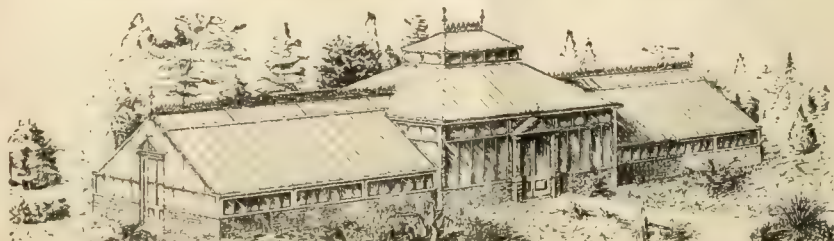
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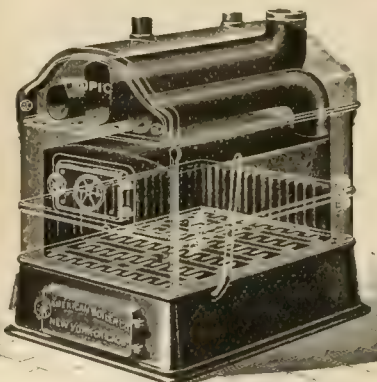
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No. 141.



VIEW IN THE PINETUM AT WELLESLEY.

Trees and Shrubs.

THE PINETUM AT WELLESLEY.

Visitors to the gardens of Mr. Hunnewell, at Wellesley, Mass., never fail to admire the numerous handsome trees in apparently endless variety scattered throughout the grounds, and to the uninitiated it is a source of wonder that so many different kinds thrive with equal luxuriance under the same conditions of soil and climate. It is seldom considered that much of the beauty of this estate is due to long experience with the plants, trees and shrubs which constitute its

chief adornment. Many years of patient trial and experiment must elapse before the picture is perfected. Each kind of tree or shrub must be accorded the situation which best suits it in that particular soil or climate. In planting a given specimen we must ask ourselves, marking all the local conditions, whether it requires shade or sunshine, shelter or exposure on a site elevated, level or depressed. Experience alone, with patience and perseverance, can determine these questions satisfactorily. One tree may die outright where another of the same kind grows vigorously under somewhat different conditions scarcely more than a hundred yards away. The intelligent tree planter will not expect his every venture to become

an immediate success. He will proceed cautiously, observing and testing as he goes, and ultimately achieve that which he set out to perform. It was thus with Mr. Hunnewell's operations in the magnificent pinetum of which we present an illustration herewith, showing the plantation as it appeared ten years ago. During the intervening period the scene has developed new and fuller charms, but the work of preserving and expanding the picture—the gardener's task of pruning, cutting, trimming and transplanting—goes on forever. It is to this necessity of persistent endeavor that horticulture owes the greater part of its fascination, and through it we are encouraged to plod along ever hopeful of doing better.

ROSA RUGOSA AND ITS HYBRIDS AT EGAN-DALE.

It seems singular that a hardy rose like *R. rugosa*, one so attractive in all its parts and free from disease and insect attacks, should not have found its way into general cultivation much sooner than has been the case. Known to botanists and rosarians since 1845, its possibilities remained dormant until a few years ago. Once started into popularity, however, its progress has been rapid. Some forty years after its discovery the plant was found to be extremely valuable for hybridizing purposes, and then France and the United States shared the honor of producing the first meritorious hybrids and the best varieties in commerce.

Simultaneously M. Georges Bruant, of Poitiers, France, and Mr. E. S. Carman, of River Edge, N. J., produced the first worthy hybrid of *R. rugosa*. Owing to some difficulties in propagation experienced by Mr. Carman, the French hybrid was placed upon the market first, as the pioneer of a new race. This rose, Mme. G. Bruant, is the result of crossing *R. rugosa* with one of the hardiest of teas, *Sombreuil*, a creamy white in color. We are not told whether the white or pink form of the *rugosa* was used, but are led to believe it was the former, as the flower of Mme. Bruant is distinctly a paper white. It is about three inches in diameter, semi-double, with the bunch of its yellow stamens half hidden in the center, and exquisitely fragrant. It follows the *rugosa* habit of blooming in clusters, and continues flowering more or less all summer.

It is most attractive when the long, pointed buds are but partially opened. The leaflets are generally seven in number, larger than those of *R. rugosa*, but not quite so dark a green, and bear evidence of its parentage in the veining. While this rose is classed as hardy, it requires protection with me. It might be well at this point to call attention to a true form of *R. rugosa* from Kamtschatka, named *Blanc Double de Coubert*, which is extremely hardy and very closely resembles Mme. G. Bruant in bud, flower and perfume; in fact, were it not that it has the true *rugosa* foliage, it would readily be taken for the French hybrid. As its hardiness is unquestioned, it may be substituted for Mme. G. Bruant where the latter requires protection. Mr. Carman's hybrid, *Emily Agnes Carman*, is a glowing crimson, or, to quote from his own description, "the size, color and odor of General Jacqueminot," and, strange to relate, Harrison's yellow was the second parent. It makes a good shaped bush some four feet high, and when seen at a distance resembles a huge plant of *Pæonia tenuifolia*. Its foliage is about the same color as that of Mme. G. Bruant, but larger and coarser veined.

M. Bruant has sent out two more, one, *Calocarpa*, is a cross between *R. rugosa* and the old Bengal rose. Its chief attraction is found in the fruits, which, while somewhat smaller than those of *R. rugosa*, are brighter in color and more numerous. The flowers are pink, medium sized and fragrant. His *Belle Poitevine* has larger and lighter colored foliage than *R. rugosa*, and not so heavily veined. Were it not for this fact, I would be inclined to consider it a variety of the species, as its flowers bear strong resemblance to those of the latter plant. They are large, single and of a deep pink color. At the World's Fair a French exhibit of *R. rugosa* was made in front of the Woman's building, in which the flowers of the red varieties

were as large and as brilliant in color as those of *Belle Poitevine*. The Lovett Company, Little Silver, N. J., has sent out a hybrid of *R. rugosa* and *Caroline de Sansal*, the latter a perfectly hardy remontant, bearing full but rather flat flesh colored flowers. The hybrid is a very prolific bloomer, beautiful in bud and flower, which is full, very double and pink in color.

Handsome and attractive as are these hybrids and varieties, there is still another one which, in my opinion, far surpasses all others in the exquisite tone and brilliance of its color. This we owe to the skill and patience of Mr. Jackson Dawson, of the Arnold Arboretum, whose work among roses and other plants has been of inestimable benefit to the gardens of the world. His hybrid rose to which I now refer, so far unnamed and not yet in commerce, is the most brilliant in color of any I have ever seen. It is the result of a cross between *R. rugosa* and General Jacqueminot. The leaves are as dark in color as those of the species, and in this emerald setting are clusters of flowers three inches in diameter, richest carmine color, fading to a dark crimson. They are darker and more brilliant than Paul's carmine pillar rose, and the nearest to them is found in *Cooling's* single bedder. At the base of each petal is a crescent shaped, light pink area, and the overlapping of the petals so covers these crescents that only the points are discernible, and these form a five pointed pink star, crowned in the center with the numerous yellow stamens.

There is a simple beauty in a single rose that touches the hearts of all of us, and when it is arrayed in the most brilliant of all colors, carmine and crimson, its charm is beyond all praise. Still, in admiring these one cannot forget the immaculate beauty of the single whites, the contemporaneous *R. moschata nivea*, Paul's single white, and the new white form of our native *R. lucida*, or the earlier blooming *R. Altaica*. There is another unnamed hybrid of Mr. Dawson's raising which I have not grown long enough to speak about fully, but so far it promises to be of unusual value. It is a cross between *R. rugosa* and *R. Wichuraiana*, possessing well marked characteristics of both parents. The foliage is intermediate in size between that of its parents, retaining the glossiness of *R. Wichuraiana*. It has the true pink flowers of *R. rugosa*, single, and some two and a half inches in diameter. The plant is procumbent in habit, and if (as appears likely) it makes as vigorous canes as those of the Memorial rose, we shall have a rose that can be treated as an absolutely hardy climber. There are other Dawson hybrids that I may have occasion to mention later on, but in the meantime let us hope that he will give his most worthy products a name and launch them out upon the world that the people in general may enjoy them. Prof. J. L. Budd, of the Iowa Agricultural College, has been working along the same lines, but as the plants I have from him are yet too small to bloom, I must wait another year before mentioning them in detail.

W. C. EGAN.

CECIS CANADENSIS.

I am pleased to see at page 290 the beautiful illustration of our handsome early spring ornamental shrub, the red-bud. How often really deserving native shrubs are over-looked in the search for exotics. I had an opportunity this spring of observing the varying glow of color

exhibited by a fine specimen situated on my daily line of travel to and from Cornell University. This individual was one of the deep, almost magenta, colored type, and gave to the passer-by, for more than three weeks, the idea of a flaming gorgeous bouquet on the lawn. Then the brilliant mantle was exchanged for one of delicate shining green. The red-bud is not very hardy; it will endure a temperature of 25° below zero without much injury to the leaf buds, but will not usually produce flowers under these conditions. Its low growing habit renders it easy of protection, so that one should try it even if situated in a cold and trying locality.

Ithaca, N. Y.

JOHN CRAIG.

NOTES ON TREES AND SHRUBS.

Both *Catalpa speciosa* and *C. bignonioides* are highly ornamental trees. In the west *C. bignonioides* is not hardy, but where it is, both species should be planted. *C. speciosa* is the taller grower, and flowers about ten days before the other. As it passes out of flower *C. bignonioides* comes in. The latter is round headed and of a low branched nature, which permits of a good view of its splendid panicles of beautiful flowers.

Magnolias of all kinds are somewhat difficult to transplant. *M. grandiflora*, being evergreen, is more so than the others, and failing to get it to grow many ascribe it to its lack of hardiness. It will live much further north than supposed. Trees of it here are now in bloom, and other flowers will come from time to time for a few weeks later.

Something else which is really somewhat tender is now in flower, the hardy white *Jasminum officinale*. This bears sprays of sweet scented white flowers, the scent not unlike that of the lilac. It needs planting in a somewhat sheltered place, as if its growth gets killed back to near the ground, as is apt to occur, it will not flower. The last year's shoots must be fairly well preserved, much as is the case with *Hydrangea hortensis*.

Let me refer to another little beauty in the same sheltered position class, *Fuchsia Riccartoni*. This survives winter after winter if in a sheltered place, say near a dwelling or a fence. Its tops may get cut back a bit by frost, but not enough to hinder it making a beautiful display of its little gems of scarlet flowers.

Is it generally known that spiræas that bloom in late June and July, such as *S. Billardi*, *S. Nobleana*, *S. paniculata*, *S. Bumalda*, *S. callosa* and varieties of these, produce splendid flowers if pruned quite close to the ground in spring? Of course, they flower very well without this, but when cut down long shoots are produced which carry much finer heads of flowers on their ends than those do which are unpruned. Where the flowers are desired on long shoots for decorative purposes, pruning close is the way to get them.

Salix pentandra, in many lists under the name of *S. laurifolia*, makes a desirable lawn tree. It makes no special demand for a wet place; plant it just where you would a tree of any other genus. Its merits are its lustrous foliage, a deep shining green. And then the leaves are of large size. On vigorous shoots they are five to six inches long. Were it not that they are too tapering at the apex, they would not be unlike the English laurel in shape, but they are more glossy.

The Japanese privet, *Ligustrum ovalifolium*, is now well known as our most useful hedge plant for ornamental purposes, but it is overlooked as a single specimen for lawns. It is a good thing

for the purpose, its bright shining green leaves setting off to excellent advantage its numerous clusters of white flowers *Ligustrum Japonicum*, with leaves almost like the European myrtle, *Myrtus communis*, is good in the same way.

Now that spring blooming shrubs are out of flower we look to some of the ornamental berried ones to continue a display, and we have several in the bush honeysuckles. The various Tartarian honeysuckles, as they are called, among which are *Lonicera grandiflora* and *L. Ruprechtiana* are brilliant with their display of red berries. Another desirable shrub in the same way is *Rhus aromatica*.

Philadelphia.

JOSEPH MEEHAN.

HYBRID WICHURAIANA ROSES.

Your Boston correspondent mentioned the fact of Mr. W. A. Manda having exhibited before the Massachusetts Horticultural Society a hybrid Wichuraiana rose with evergreen foliage, but feeling that Mr. Manda might have very much more in his South Orange, N. J., nursery, I ran out there the other day.

To those who know the ability and enthusiasm of Mr. Manda, it will be no surprise to be told that he has gathered together one of the finest and most select collections of salable plants in this or any country. It would take a volume of the GARDENING to describe his treasures, in orchids, palms, ferns, greenhouse flowering plants, and hardy perennials and shrubs of the most desirable forms, many of them seldom seen elsewhere.

There are to be found here golden-flow-ered, spotted callas; *Adiantum capillus veneris imbricatum*, known to some as the hardy Farleyense, in fine shape with its beautiful pinnæ, the very counterpart of the familiar tender variety; asparagus in many fine species; seedling anthuriums with pink and white spathes, and the familiar scarlets in many new shades; *Abutilon Savitzii* with foliage as clear and fine as the variegated box elder and standing exposure much better; *Peperomia sarmentosa*, promising to be a unique and beautiful basket plant, and thousands of other things which I cannot mention, because I want to talk about the roses.

As you know, Mr. Manda has been working with the popular very hardy trailing or climbing Wichuraiana as a seed parent since he started for himself at South Orange, and his set of hybrids sent out two years ago have had a deserved and wide popularity, but it is pre-eminently under the raiser's care that the merits of these beautiful creations can best be seen. He has tested them in every conceivable way, on dry hill sides, in the shade, their roots exposed to the winter, and Mr. Robert M. Gray forced a set of them at Julius Roehrs' and found them as free flowering as Crimson Rambler. With their fast multiplying colors and extreme floriferousness, their ease of propagation and consequent greater cheapness, it seems to me this class of roses are likely to run the azalea a hard race for the first place as florists' Easter flowers.

The new evergreen set are even more vigorous but will not probably be in the hands of the trade before next year. Many of you may, however, wish to know what they are like. They are Wichuraianas crossed with Perle des Jardins, Meteor, American Beauty and other forcing roses. To Manda's surprise, I daresay, they retained their foliage outdoors last winter. They are most luxuri-

ant growers, evidently hardy, and worthy of the most extended trial wherever covering plants are desired. To my mind the most beautiful are two crosses of the Perle, Gardenæflora, with beautiful yellow buds, and expanded flowers like *Gardenia Fortunei*, and Jersey Beauty, a single white flower expanding to three inches across, with big clusters of golden yellow stamens studded over beautiful masses of rich and shining green foliage; it will take the place of the Cherokee rose northward. Evergreen Gem is another dense grower of this set, and besides these are several as yet unnamed such as a cross of Meteor with fine, full, double, light pink flowers. The Beauty crosses had scarcely arrived at a condition for me to talk about, but I would say to florists that they should watch these roses, for I believe they will prove to be among the most useful acquisitions for a wide section of country that we have seen in recent years, and for the class of customers who desire roses for training on walls, or covering bare ground, they should prove of great value.

Trenton, N. J. JAMES MACPHERSON.

THE ARBOR VITÆ AS A HEDGE PLANT.

ED. GARDENING:—The enclosed specimens show the condition of an arbor vitæ hedge which has been growing on my place for twenty-five or thirty years, and suddenly, within the past eight or nine months, has commenced to decay, the progress of decay being general along the whole hedge, which is about 300 feet long. Can you determine from these specimens what it is that is destroying it? I have supposed that it might be affected by a similar condition which destroyed two years ago a large clump of arbor vitæ trees of considerable size that were growing about 400 or 500 feet south. It looks as if my hedge was utterly destroyed, as there is not over one-sixth of it showing any green, and I am considering the wisdom of replacing it with a privet hedge, unless something better can be suggested. What do you know of the hardness of privet on the lake shore, about twenty miles north of Chicago, on a place situated close to the edge of the bluff which is there about eighty feet high? Is the native privet or the Japanese privet the better for my purpose, or would you suggest something else? A. McL.

I think the very dry seasons since 1892 are the cause of so many of the plants dying. The arbor vitæ is a native of cool, moist places. Nearly every ravine along the lake from Evanston north originally had a few growing in the bottom and on the south sides, very rarely on the north bank and still more rarely on the top of the bluff, where millions of seeds were undoubtedly scattered. I am justified in saying that over one-half of the arbor vitæ hedges within fifty miles of Chicago have been killed outright, or so many of the bushes have died as to make the hedges unsightly, within the past four years. Over one-third of the native timber trees, in some places two-thirds, have died from the effect of the drought. As a rule deciduous trees show the effect of insufficient moisture before the evergreens do, this on account of the formation of the leaves. A single dry fall will often injure the largest forest trees permanently even if followed by an unusually wet and favorable spring. The injured trees invariably burst into growth in the spring and appear to be flourishing, but during July and August the leaves begin

turning yellow and fall. The bark loosens and is attacked by insects, which, by many, are thought to be the cause of death. There has never been a more favorable season for plant growth than this, still a number of large trees are beginning to fail. One can easily see how trees planted out of their natural habitat will fail in such trying times. Arbor vitæ should never be planted in heavy clay soil. They may do as your correspondent's have done, thrive for a number of years and then be irreparably injured. Of the evergreens Norway spruce and the white spruce are better adapted for heavy soils, and *Berberis vulgaris*, *B. purpurea*, *B. Thunbergii* and the Japan privet, often called California privet, among the deciduous shrubs. The latter needs a well drained soil or parts of its new growth will kill back in severe winters, but it is such a strong grower that it soon recovers. THOS. H. DOUGLAS.

For a hedge in the situation stated my experience is that the common privet would do, especially the Russian form introduced by the Iowa Agricultural College at Ames, Iowa. This is *Ligustrum vulgare*. *L. ovalifolium* from Japan, but commonly called the California privet, winter kills with me, but is, I understand, hardy at the west side parks, Chicago. *Syringa villosa* from North China, making a dense bush seven to eight feet high, would make a beautiful hedge, as it branches down to the ground. It blooms in June, long after the common lilac, bearing rosy pink flowers. Its chief beauty, however, is the dark green of its massive foliage, aptly referred to by J. W. Manning as resembling the foliage of the white fringe tree (*Chionanthus Virginica*). One thing probably in the way of its use is the expense, as it is not very plentiful, and again comes the question of the room in width it would take. In time, if well grown, it will require fully seven feet in width. It would require very little trimming, and that immediately after blooming. The common barberry is hardy but is apt to get bare at the bottom unless trimmed properly. The bush honeysuckles make good, high hedge plants, and are fine in berry. *Spiræa Thunbergii*, for a low hedge, say not over three feet high, cannot be excelled for beauty at all seasons, while *S. Van Houttei*, when in bloom, is magnificent, but for a time afterward the latter looks somewhat seedy and requires intelligent pruning.

Rosa rugosa, the white and pink varieties intermixed, makes a very showy hedge. It is apt to be uneven at the sides and top, but some prefer the informal. If properly managed, it may reach a height of about four feet, and should be cut back annually at the top to keep the bottom well clothed. *Rosa rubrifolia*, under the same treatment of cutting back, makes a more pendulous hedge, extremely graceful, and beautiful in the color of its leaves, flowers and fruits. The sweet briar can be made into a good hedge, wide and drooping, but requires considerable space in which to properly develop. With the exception of *Ligustrum ovalifolium*, all the plants here mentioned stand this climate well. W. C. EGAN.

Highland Park, Ill.

GALENA HORTICULTURAL SOCIETY, GALENA, ILLS.—The annual outing was held July 11 at Millbrig. It was a regulation picnic gathering, much of the success of which was due to the efforts of J. S. Helm.

The Flower Garden.

EREMURUS ROBUSTUS.

The *eremurus* is a member of the *Liliaceæ* order and indigenous to Asiatic Russia and Hindostan. There are several species, perennials in nature, and although easily grown, they have not yet found their way into general cultivation. They are seldom found in nursery catalogues, probably from the fact that it takes some years to produce a blooming plant from seed.

The tallest of the genus is *Eremurus robustus*, a native of Turkestan, first described in 1874. The generic term is derived from *eremos*, solitary, and *oura*, a tail, referring to the tall flower spike. The specimen figured was bought in the spring of 1896 as a large plant, but did not bloom until this, its third summer. Seedlings raised the same year seem quite a long way from a flowering size. The flower stalk of the plant illustrated had been in bloom nearly two weeks when photographed, and will undoubtedly last over ten days more. It is eight feet four inches high. The first flower opened at four feet from the ground, thus producing over four feet of bloom. Old plants have been known to send up spikes over ten feet in height. The flowers are light pink in color, one and three-quarter inches across, forming a six petaled star. The yellow tipped stamens form quite a feature, and add considerably to the plant's attractiveness. These flowers are held stiffly out at right angles to the stalk, on thin, wiry peduncles two inches long. The outline of each flower is seen in its entirety, thus affording glimpses of the main stem all along its course.

This, it seems to me, is one of the most pleasing features of the plant. The lower blooms fade after a few days, but so far, at all times there has been a mass of perfect flowers over a foot in length. The buds show the pink color and are handsome in themselves. The leaves, forming a rosette at the base, are from three to four inches wide, and over two feet long. About the latter part of August they disappear entirely, leaving no trace of the plant above ground. Early in the spring they again make their appearance, and at this time it is best to place a box or barrer over them at night in order to protect them from the late frosts. *E. robustus* likes a rich soil, moist but well drained, and plenty of water during its flowering period. This species seems hardy, but to feel certain of carrying it through our winters, I make a mound of ashes over it in the fall.

W. C. EGAN.

HERBAGEOUS PLANT NOTES.

In the latter part of June the gorgeous *Iris Kæmpferi* begins to open its first blossoms; the weather is not always very favorable for the development of perfect flowers of the largest size and whenever possible in dry spells the plants should be treated to liberal waterings so as to keep the ground constantly moist until all the flowers are past. In commercial places where only plants are wanted, little or no attention is paid to the production of good-sized flowers, but when we grow them for ornament, or for cut flower purposes, watering should not be neglected, as moisture at the roots will not only increase the size of the petals, but will also improve the lasting quality of the flowers. We had occasion to observe the difference in the size and durability of flowers in two patches of this iris on our



EREMURUS ROBUSTUS

place last year. One lot was planted in light, dry soil, the other in a moist situation. Both were exposed to the full sun and the varieties were the same in each patch. On clear, hot days the flowers in the first bed would not last more than four or five hours, while those in the moist patch were as fresh as could be desired and often remained in good condition for three days.

Inula hirta is a pretty, very free blooming, yellow, daisy-like flower; blooms in the second half of June and during July; grows fifteen to eighteen inches high and is decidedly useful as a cut flower. *I. glandulosa* is a much larger flower, four to five inches or more across and of a deeper golden color. The ray florets are narrow and long, giving them a fringed appearance. The foliage and stem is covered with whitish down and its height is about two feet. This valuable plant is not often seen in collections, but perhaps only because it is little known and does not increase very rapidly. It blooms with us regularly from June to August and is as hardy as an oak tree and succeeds in any soil or position.

The gaillardias have been out since the middle of June. Among the improved varieties we have not only flowers of immense size and semi-double, but also great variations in color; we have pure yellow, yellow with a dark disk, broad

rays and quilled rays, red and yellow combined in various ways or shades and some flowers are deep crimson with only a barely visible yellow edge. Flowering freely until frost, their value as ornamental plants for beds, borders or shrubberies is apparent and the flowers are also largely used for cutting. For this latter purpose only the best varieties should be procured, as ordinary seedlings will give too large a percentage of small, inferior blooms which do not sell readily.

Verbena venosa, that persistent bloomer, has been used quite extensively as a bedding plant in the last few years. Several complaints have reached us that this plant was not hardy, but that must be a mistake for we have always been able to keep it uninjured in the open ground without protection of any description. It is true, however, that the old plants seem to be entirely dead in spring and no life is visible above ground when most other plants are well advanced, but if we leave them undisturbed a little longer, we will soon notice strong growths coming up thickly all over the patch. This vigorous growth springs from the long, wiry underground runners which were formed the season before; at nearly every joint a new plant will be produced and it is necessary to thin considerably, else the plot would be overcrowded in a short time. If these runners

are dug up in early spring before they start into growth, we may cut them into small pieces and in this way raise hundreds of strong young plants, which, when potted off singly, are ready to bloom by the middle of May, while those left to themselves outdoors will seldom begin to flower freely before the end of June. This method of propagation is cheaper and faster than raising young stock from seed.

Campanulas are out in great variety; for constant blooming few are better than the Carpathica section in their various shades and the lovely *C. rotundifolia*; neither of them are tall or rank growers; the stems are sent up only twelve to fifteen inches high and come out in succession, thus furnishing a continuous supply of flowers until fall. A mass of luxuriant pretty foliage covers the ground effectually at all times and the old stalks fall over as they decay and are hidden from view, though it is best to remove them as soon as their flowers have faded. *C. persicifolia Backhouseana* is a great improvement on the type; the bells are larger and of more substance and the growth is more robust. *C. persicifolia alba coronata* is a very pretty semi-double, white form, which can be recommended for cut flower purposes. The same may be said of *C. Trachelium fl. pl.*, which grows a little taller and has larger and very double bells.

Cephalaria Tartarica, with its long-stemmed, straw-colored, scabiosa-like flower-heads, is now in full bloom; it stands the drought remarkably well, though in moist ground the size of the flowers is improved; yet they are of good size here, four inches and more in diameter, five to six feet tall and with luxuriant ornamental foliage. It is admirably adapted to planting in the lawn, where a clump forms a symmetrical specimen and we need not be afraid of strong winds damaging either the foliage or the tall flower stems.

Salvia sclarea, with its immense panicles of pale, lilac-blue flowers, is a rather large plant, three to four feet high. It wants plenty of space, for the leaves are large and broad; the flowers will continue in fine shape until well into August and it is a grand plant for all purposes, excepting the small, narrow border. Any well enriched soil will suit this plant and where an occasional watering can be administered the panicles will increase wonderfully in size.

Epilobium angustifolium, to do its best, wants moisture, although we have fair success in our dry borders where its average height is reduced to about three feet, while in moist and partly shaded positions we often see them six feet high. The long, tapering, branchy spikes are produced on every growth; the individual rosy flowers are quite large and of a lovely crimson color. The dwarfier white variety, *E. angustifolium album*, flowers with equal freedom, and both are very desirable for borders, shrubberies or for naturalizing in the wild garden. *E. hirsutum* blooms in large corymbose clusters some weeks later than the others; bright pink and is of equal, if not of superior value for the same purposes. Height generally from three to four feet.

J. B. KELLER.

THE FOXGLOVE.

This hardy biennial or perennial, *Digitalis purpurea*, is one of the showiest plants of its class and very easy of cultivation. At Schenley Park some ten thousand of these plants are under William Falconer's care and have for several years been a great attraction when in flower. That the public takes an interest

in flowers as seen in displays of this kind is evidenced in the demand that has sold thousands of digitalis in the city of Pittsburgh and vicinity alone since they were brought to notice in this way.

Schenley Park is a great public educator, and such grounds and buildings, with such superintendents as Mr. Falconer and the late Mr. Bennett, should be established in every large city in the land. It can be done if intelligent efforts are put forth. Let the florists' clubs start the movement; get influential citizens and newspapers interested, and when the idea is well before the people have the proper legislation enacted, with the necessary appropriations, and another floral school would soon be founded that should be a great source of pleasure to the community which surrounds it. Boston's public gardens have done wonders in educating the people, and the many beautiful private estates of large and small dimensions in that city and its environs bear testimony to their worth and the appreciation in which they are held by the people.

ROBERT KIFT.

THE BEST OF THE HARDY FERNS.

There is so much pleasure to be derived from a collection of hardy ferns such as I have, that I cannot refrain from mentioning what kinds they are, that others may get together and have the enjoyment of

such a collection. But before mentioning the sorts, let me say that a very great deal of the well doing of the plants depends on having them in the right place. In many respects such a place as mine occupy could not be bettered. It is close to a house, on its east front. The sun shines on the plants from its rising until about 11 a. m. This is a help to them, for I have found they do not do so well in total shade. In addition to these favorable conditions the soil is damp.

In this collection are nearly all the sorts native to these parts. I will name some of the larger growing ones which thrive well enough without the attention smaller ones require: *Osmunda cinnamomea*, *O. Claytoniana* and *O. regalis*, *Struthiopteris Germanica*, *Aspidium marginale*, *A. acrostichoides*, *A. spinulosum*, *A. Goldianum*, *A. cristatum*, *A. thelyptera*, and *A. Novaboracense*, *Adiantum pedatum*, *Dicksonia pilosiuscula*, *Onoclea sensibilis* and *Polypodium hexagonopterum*. Of aspleniums there are *A. filix-femina* and *A. thelypteroides* of good size, besides the somewhat smaller *A. ebeneum* and *A. angustifolium*. The woodwardias comprise *W. Virginica* and *W. onocleoides*. Besides these there are some of the hardy ones of England and some from the Pacific coast, with many of the smaller growing kinds of our own woods. The interest of such a collection may be increased by procuring the plants from localities vis-



DIGITALIS PURPUREA

ited. For instance, I have a cypripedium from Blackford's Ford, Virginia, an *Aspidium marginale* from Big Round Top, Gettysburg, and a *Woodwardia onocleoides* from the National Cemetery at Arlington, Virginia.

While all ferns are beautiful, I am certain that my three osmundas attract more attention than all the rest. Their fertile fronds are so conspicuous that they well merit their name of flowering fern. As is generally known, *O. cinnamomea* sends up fertile fronds quite distinct from the barren ones. My largest plant is always attractive, but this season it surpassed all previous efforts, having no less than twenty-two fertile fronds with fifteen barren ones, both lots at one time, as is always the case. As the fertile ones come to perfection they change from green to a cinnamon color, from which comes its name, cinnamon fern. The other two species, one of which is the well known king fern, with the cinnamon, are fully equal to flowering plants in the interesting display they make in early spring. The *Aspidium marginale* is one of the noblest of our hardy ferns. It is the most "bird's nest" looking one of all we have. The fronds arise from around a central crown, arching outward as they grow. Then, too, it is evergreen, in which respect it has for company its fellow species, *O. acrostichoides*, *A. spinulosum* and *A. cristatum*.

In regard to soil, I have not found it at all important. I have found that the plants like manure, a top dressing of this material adding to the size and the deep green of the fronds. With a little care to get a ball of earth with them, they can be transplanted at almost any time. When to be removed from their wild state, the work must be performed before the fronds decay, or the plants may not be found when wanted.

Philadelphia.

JOSEPH MEEHAN.

The Greenhouse.

CHRYSANthemum NOTES.

Plants set out two weeks ago should now be growing rapidly, and care must be taken that they are never allowed to dry out too much. Neither should they be given too much water for if kept too wet they will make a soft growth, which quickly wilts and burns on exposure to the sun. Remove all the weeds from the soil as soon as they are large enough to handle, and keep the surface of the soil as even and firm as possible.

Some varieties will throw out lateral shoots at every leaf when they begin to make rapid growth and these must be rubbed out as soon as possible. A number of other sorts, from early struck cuttings, will set a bud at this time, which also should be removed, allowing one of the shoots which spring from its side to remain. In order to keep down the red spider and black aphid, as well as to insure luxuriance of growth, a free use of the syringe is absolutely necessary in bright weather.

Do not neglect to stake and tie the plants as they require it; timely attention to this will save many valuable shoots. We have found it impossible to grow fine chrysanthemums under heavily shaded glass. Our houses run north and south and yet we do not shade at all, maintaining the proper temperature so far as practicable by frequent syringing and strict attention to the ventilation. If adequate

ventilation cannot be given with the ventilators at hand, it would be well to remove a pane of glass here and there along the sides.

All plants intended as specimens for exhibition should be given their final potting now, taking care to pot firmly with ample drainage. Do not water heavily until the plants have had a chance to take hold of the new soil, which takes a week or thereabouts, and never pot a plant when it is dry; better water it thoroughly first, and allow it to drain off by standing a while. Fine coal ashes banked up around the pots where the sun strikes them will keep the roots cool and encourage growth. The shoots should be pinched before they get too long, otherwise it will be difficult to produce shapely plants.

C. W. JOHNSON.

PALM LEAF BLIGHT.

For several years my attention has been called to a leaf blight upon palms. Recently in passing through a large palm house it was observed that many of the leaves of some sorts of palms, and particularly the fan-leaved species, were badly blighted. Fig. 1 shows a much reduced view of a badly diseased leaf of *Livistona rotundifolia* made from a photograph. This leaf was almost wholly blighted and the boundary between the dead portion and the part still alive, although indistinct in the engraving, may be seen near the base of the leaf. Fully three-fourths of the leaf was brown and worthless, and more than that was the place where countless numbers of the germs of the fungus were being propagated.

If the persons interested in this trouble will look closely at the upper portions of

ing through the skin of the leaf and in the rupture, usually oval in outline, developing a number of stiff black hairs like minute eye lashes, and between them are produced the multitude of spores free upon the surface of the rift.

The writer dwells upon this spore formation for palm growers are sometimes inclined to think that, if there is any fungus, it plays no primary part. It may be true that the colletotrichum thrives usually while the palms are small or when the house is under conditions most favorable for it; but it nevertheless



FIG. II.

needs to be remembered that the blight is positively contagious and may become a serious pest if left unchecked. Plants that are badly diseased should be excluded from a house of healthy palms, and all blighted leaves like the one shown in Fig. 1 should be picked off and burned. It is not profitable in any way to let them remain on and spread the trouble to other leaves of the same plant or to furnish spores to be carried to other plants by the process of watering. The beauty of a palm is in its strictly healthy foliage, and therefore it should be cared for accordingly. BYRON D. HALSTED.

NOTES ON ODONTOGLOSSUMS.

It has been said that *Odontoglossum crispum* is the queen of orchids. Certainly there are more plants of it grown than of any other kind, and the more one has the more one wants, chiefly because there are no two that flower alike, and indeed the same plants vary a great deal each year. It is a cool house species, one that needs very little heat as it grows just below the frost line on the Andes in Colombia. The best situation for it is in a north house such as is used for propagating in winter; one that is kept at about 50° will suit it admirably, as most of the growth is made in winter. The plant blooms in spring and early summer and the sprays are exquisite for all decorative purposes. Whether cut or used in pots, to see them arching out over a bank of adiantums is to see one of the prettiest combinations possible. We have used them very successfully in this way during the past few weeks.

Another good species is *O. Rossi*, a Mexican plant which may be classed also *O. Cervantesii*, as both are very much alike. These are winter kinds, easily grown in a cool house in summer, with a little more warmth among the cattleyas in winter. In this way we have brought around some very sick plants, making bulbs as large as hen eggs. The flowers are invaluable for boutonnières for either sex and last well when made up. *O. citrosimum* is also another valuable Mexican kind for cut flowers, and it may



FIG. I

the leaf when it is already brown or ash-colored he will find many small specks. These specks are not easily shown in an engraving of a whole leaf, but in the enlarged piece shown in Fig. 2 they are more distinctly seen. These specks do not come until the fungus, a member of the genus colletotrichum, has practically destroyed the leaf at that spot. They are specks produced by the fungus break-



ODONTOGLOSSUM ROEZLIH AND VARIETY ALBA.

be said that when an orchid hails from this land of sun it, in almost every case, needs abundance of light in winter to mature the growth and make it flower. Our sun is too hot in summer if given in its entire strength, but in winter is necessary in its full power. Many growers dry *O. citrosimum* almost to death to induce it to bloom, and this is a mistake. Give the growth sun and air and it will flower well without material injury. There are many back walls in garden establishments that might be utilized by cultivating some of these plants wired on blocks of fern root and suspended where they can get plenty of water from the hose in summer; the labor will be small and the returns ample, as some already in the business know and can testify.

We have a great fancy for *O. grande*; it is an early fall blooming sort and never fails to cause comments from the interesting shape of the crest. It is easily cultivated, at least we find it so, for our plants have been here for about six years and are stronger than ever. This plant must never be dried up or it will suffer quickly. Another valuable class of plants that used to be grouped with this genus is the miltonias, one of which has numerous admirers in *M. vexillarium superbum*, and a whole chapter might be written on it alone. Another good kind figured in this issue is *M. Roezlii*, named in honor of the intrepid collector Benedict Roezl, who saw his first plants, floating down stream on a log, in full bloom. Both the type and the white form are very beautiful, and they require a little more heat than the others, say a palm house, with plenty of moisture from the hose to keep down insects, thrips especially. Under

these conditions they will bloom freely in winter.

There are many other odontoglossums which are good and easy to cultivate. They need lots of moisture, and if the above few kinds are taken in hand, it is safe to say others will follow. Always pot the plants when signs of new growth make their appearance, and this is when new roots are emitted and seek a firm hold in fresh, sweet compost, such as fern root and moss in equal proportions. If the plants are watered properly, the moss will grow and form a healthy rooting medium as well as an unfailing index as to the need of water. We usually begin to pot *O. crispum* in the month of October, taking the plants most advanced first. The hot days are then past and the plants take hold readily without any check such as would follow this operation earlier in the year. Of course, if an orchid of any kind gets sick, it is best to turn it out at once whatever the season, as delay will cause the loss of the few roots that remain alive.

E.

THE HARRISII LILY DISEASE.

We are informed on excellent authority that the British government has sent a Kew man to Bermuda to investigate the Harrisii lily disease, and if possible to take such steps as will insure its eradication. This expert is of the opinion that the mite or insect, to the presence of which the disease is due, thrives in any land that is over fertilized with chemical manures, and is not peculiar to Bermuda or the Harrisii lily. The real trouble, he claims, lies in the fact that the stock itself is weakened in vitality. The bulbs in the

past have been forced to such an extent by the aid of chemical fertilizers that the scales employed for propagation are unable to produce healthy bulbs. New stock from another source, Holland, for example, it is stated, would prove sufficiently robust to successfully resist the attacks of this pest.

OREGON HORTICULTURAL SOCIETY.—The midsummer meeting was held at Eugene, Ore., June 28, and was very successful. The following excellent papers were read: "Fruit Evaporation," illustrated with samples, J. H. Monteith, Glenada; "Requirements of Trees and Fruits Upon the Moisture of the Soil," Hon. John Minto; "Insect Pests," Prof. A. B. Cordley, illustrated with stereopticon views, by Prof. E. F. Pernot; "What Regulates Prices," Hon. H. B. Miller, Eugene; "A Word About Evaporation," W. K. Allen, Newberg.

GREENE COUNTY HORTICULTURAL SOCIETY, SPRINGFIELD, MO.—There was a large attendance and a fine display of flowers, peaches and potatoes at the July meeting, held on Dewey Campus. W. A. Irwin reported that there will be but twenty per cent of the usual crop of apples, pears and peaches. Grapes, he said, were rotting and recommended spraying with Bordeaux. Miss Emma J. Park read an interesting paper on "Some Things Horticulturists Owe Science." Mrs. A. W. Howell was awarded all four premiums for cut flowers. Col. E. H. Grabill exhibited Industry gooseberries, London red raspberries, very fine; and a hybrid raspberry-blackberry. The committee decided the flavor was very fine.

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Do not sprinkle the lawn lightly. Give it a thorough wetting or let it go dry.

F. S. PHENIX, of Bloomington, Ills., writes that his establishment is not the nursery established in 1852 by Franklyn K. Phoenix, but is entirely separate.

RECENT advices indicate that the wet spring in Holland has injured the hyacinths, and that bulbs will likely be higher in price at delivery time, and not as large as last year.

KEEP the soil loose and porous around both flowers and vegetables, no matter what kind of a season you have. A loose soil retards evaporation in dry weather and assists in the absorption of water in a rainy period.

JOHN MORRIS, gardener at Forest Park, St. Louis, has "remembered the Maine" by an ornamental bed representing that famous battle ship. Another new decoration in the park is a huge shield-shaped bed in which in bold letters is, "Dewey, U. S. N."

APPLES to the extent of 97,400 bushels were imported into England during the month of May, their estimated value amounting to about \$249,730. In the five months ending with May the imports of this fruit (exclusive of dried or canned products) were worth \$1,660,490.

J. ALGOTS, gardener for Mrs. Pullman, Chicago, has in front of their conservatory *Celosia cristata* and Mrs. Parker geranium. The combination of the dark red cockscomb with the light colored foliage of the geranium is very pleasing. Mr. Algots plants the celosia about the 25th of February and grows it in boxes and pots until time to plant out, which is done when he does the general bedding of geraniums and other plants. This year they were planted May 26.

IN reply to "A correspondent" we beg to state that for a blue (flowering) bedding plant we know of nothing better than the common lobelias. The plants, to be sure, owing to their dwarf character, have only a limited range of usefulness, and should be given a position along the margins of beds or borders; but given a suitable location, there are few beds prettier than one composed entirely of a good variety of lobelia. Taller plants with bluish flowers may be had in some of the ageratums.

THE plum-leaved spiraea (*Spiraea prunifolia*) bloomed unusually well this spring. Its small, double, pure white flower somewhat resembles achillea, The Pearl. This shrub combines all the good qualities required, and possesses no poor ones. Its numerous flowers extending closely along the entire length of the smaller twigs, has suggested for it the common name of "Bridal Wreath." The oval foliage is a glossy green all summer, very pleasing in its combination with other shrubs, and in the fall it assumes a most brilliant coloring. It is one of the oldest shrubs in our gardens that come from China and Japan, having been known since 1845. It grows about four feet high.

THE WEATHER AND THE CROPS.

TEMPERATURE.

The past two weeks were cooler than usual in the west gulf states, southern portions of New Mexico and Oklahoma and from the North Pacific coast eastward to Lake Superior, including the middle plateau and the Rocky Mountain districts. The deficiency was from 1° to 12°. The southwestern states experienced a slight deficiency. Through the Mississippi valley and eastward the weather was warmer, the excess ranging from 3° to 8°. Very hot weather prevailed on July 2 and 3 in the Atlantic coast districts, and at a number of stations the maximum temperatures were the highest recorded in the first decade of July since the establishment of the Weather Bureau.

PRECIPITATION.

There was more than the usual amount of rain over the greater part of the gulf states, the northwestern states, the Ohio valley and middle Atlantic states. In the middle Rocky Mountain slope, the Mississippi valley, the southern Atlantic and eastern gulf states the precipitation was below the normal. No rain fell on the Pacific coast except an inappreciable amount on the extreme northern coast.

CROPS.

Conditions in general have not been unfavorable for crops. A destructive "norther" in northern California blew much fruit from the trees and shelled a large part of the unharvested grain. Corn and wheat reports continue to indicate a full crop. Cotton has made too rapid growth and is rusting in Louisiana. Fruit prospects are not of the best, as in several central states there will be but varying portions of a crop.

PARK WOODLANDS AND PLANTATIONS.

The very practical paper of J. A. Pettigrew, read at the American Park and Outdoor Art Association convention at Minneapolis June 22, is here presented in full:

The subject of the treatment of natural woodlands in parks is of vast importance and commands the earnest thought of landscape gardeners. Such areas are generally made up in great part, of thick growths of trees, which have injured each other more or less, by close contact, natural perhaps, in the sense of having sprung from the soil without the aid of man, but having, nevertheless, been subject to such unnatural conditions as to upset nature's balance.

The effort on the part of the landscape gardener or forester to improve the natural or growing condition of woodlands in public parks, is generally met with opposition from probably well-meaning, but badly informed critics, who cry that the work is an interference with nature, and who call in the aid of ready tongues, and reader pens to stop the "outrage."

The forester brings into service the practical experience and study of years in his efforts to assist nature in her work, yet all for naught. The clamor of a few enlisted in a mistaken crusade discourages him, or influences those in authority to the extent of causing a stoppage of the work, and the result is seen too painfully all over the country, in their malformed and distorted condition, from over-crowding of park trees.

General rules can scarcely be framed for the treatment of natural woodland—much depends on the use to be made of it, whether for woodland effects or woodland use. The first operation in a thick piece of woodland desired to be retained for natural effects, should be that of thinning; trees of individual merit or beauty should have interfering trees removed, to allow of their own development. In places, areas of greater or less size may be entirely filled with trees, which, by reason of overcrowding, are, so far injured that they can never recover their lost beauty; in such case, a free cutting should be made to allow light to penetrate to permit of the growth of saplings or newly planted material below, and further cuttings made, from year to year, as the young growth demands. Care should be taken that all saplings that may not be needed are cut out, only retaining those necessary to replace sickly or injured trees. Judicious thinning of all trees should be made where interfering with the growth of better ones, noting, at the same time, and retaining picturesque groupings or pleasing combinations of trees, preserving, in the general mass, a natural appearance, and encouraging as much individuality as possible, without impairment of natural woodland effects. This thinning will permit of the passage of light to the undergrowth which will respond quickly to its influence and materially enhance the beauty and naturalness of the woodland. A woodland so dense as to prohibit the growth of vegetation on the ground, is monotonous and dreary.

The improvement to the wood by thinning is noticeable in the following season's growth, the branches, relieved of the necessity of having to struggle upwards to an opening in search of light, spread out, and it becomes apparent very quickly, that the work of the axe will have to be resumed the following winter, in fact, whether in woodland or planta-

tion, the work of the axe is never completed; it is vandalism to lay it away.

The best time to make selections for permanent trees or for cutting is in the summer. At this season, the condition of the tree can be more easily ascertained; its relative position and needs are more apparent.

Natural woodlands, when included in lands taken for park purposes must of necessity either dominate, or be subservient to a general scheme of adaptation, in the latter case modifications of their outlines may be necessary. Let no mistaken sentiment prevent the execution of this work. A park is not made for a day; the work of the present is subject to the judgment of the future; the mistakes of to-day bear disappointment for posterity. Should it, then, become necessary to cut away any part of the woodland, in the execution of a properly devised plan for the unification of the different parts of the ground into a harmonious whole, hesitate not to apply the steel.

Very often natural woodlands are subject to severe and constant use of the public, when it is impossible to retain underbrush and ground cover; in such cases the destruction of underbrush exposes the ground to the action of the sun. The roots running near the surface which have been protected from heat and dryness under the natural forest covering are killed off and the trees soon die. This result can not be avoided unless some other covering can be substituted. One of four or five inches of loam seeded in grass will serve the purpose, and be besides of great benefit to the trees.

The proper treatment of park woodlands includes the careful cutting from the trees of all dead or diseased limbs. A large proportion of trees come to an untimely end, because of the decay introduced into the boles through the stumps of dead limbs. Each cut should be made close and even with the bole, and well painted over, renewing the coat whenever necessary until the wound is healed over.

While natural woodlands within park areas are arbitrarily placed, and generally control any scheme for harmonizing them with other features, plantations are entirely governed by their location and character by the landscape gardener.

The preparation of the ground for planting is of the first importance to the trees. On it depends largely whether the plantation shall be a mass of healthy, vigorous foliage, or a collection of stunted trees, dragging out a starved existence. For the production of a healthy growth of deciduous trees, an essential necessity is a sufficiency of good soil. A park commissioner once said, "Besides the diamond, since becoming a park commissioner, I have discovered another valuable—loam." Without it, noble proportions in the trees can not be expected. Therefore, to achieve good results, soil, and plenty of it, must be provided. This is expensive work; an old saying contains sound advice: "If you wish to spend twenty dollars to plant a tree, spend nineteen and a half of the amount in the preparation of the ground."

No work of park construction should take precedence over that of tree planting, other than the work necessary to make the ground intended for plantations available; bridges, buildings, roads and walks are of secondary importance in comparison.

Assuming that the soil is good, preparation for planting should be commenced in the preceding summer by plowing and

deeply subsoiling, plowing the ground two or three times, reducing it to a good condition of mellowness. Spring planting is preferable in our northern latitudes. Fall planted trees, unless put in early enough to have made roots to sustain them, are apt to dry out by evaporation during the long freezing months. A good method is to make selections and purchases in the fall, which can be heeled in over winter, and protected from drying winds; thus planting can be commenced much earlier, unhampered by the delays of spring shipments from nurseries. In planting, plant thickly—ten to twelve feet apart is not too close—the ground then is more quickly shaded; the trees also shelter each other. Thin out by transplanting or even by cutting when the branches interfere. Under no consideration, permit injury to be done by overcrowding. This method has many advantages; it provides shade for the ground and for the trunks of the trees; the trees, thickly placed, protect each other from scorching winds; it permits of easy and cheap cultivation of the ground, and is a convenient nursery from which finer trees can be gotten each season than can be had in commercial nurseries. The plan also gives a greater variety from which to select the permanent trees. It gives, too, the effect of mass more quickly.

The contrary opinion is held by some who advocate the planting of the trees in their intended permanent positions, and no others; the principal reason for which seems to be that from a fear of public outcry, the thinnings are not made, or that from negligence or ignorance the trees are allowed to overcrowd and spoil each other. The first objection may be met by transplanting, instead of cutting out. To the second, it may be said that ignorance or negligence can not be guarded against by any method of planting.

It is best to plant the intended permanent trees at a distance of from thirty-five to fifty feet, according to their expected development. A second arrangement may be made, nearly alternating, of some other kind of tree, and even a third combination may be made, again alternating. The advantage of this plan is that any one of the three arrangements may be adopted as may be deemed best, at thinning time, for the permanent trees.

The effect of large masses of trees of one species is much more dignified and impressive than a conglomeration of trees of different kinds and habits of growth. The mass or groups of varying size may be allowed to merge into each other in irregular, ragged outlines. It is not considered desirable to plant shrubs throughout new plantations, as they interfere with the free use of the cultivator, which is a valuable adjunct to the diligent planter desiring vigorous, rapid growth.

Cultivation should be maintained for a period of three years or so, when the shrubbery or ground cover may be introduced. Shrubby should, however, be planted on the borders of the plantation, when made of such wood bordering plants as shadbush, redbud, viburnums and cornels, etc.

For planting in public parks our native trees and shrubs can not be surpassed for appropriateness and beauty, and for this purpose their use alone is advocate; nothing can be more inharmonious than the introduction into park woodlands and plantations of exotic trees and shrubs or of variegated sports and monstrosities; rather let our parks be typical of our native woods and glades, helped along nature's lines by the artistic hand.



A. L. BROOKE,
President-elect Am. Association of Nurserymen

WORKERS IN HORTICULTURE, XIII.

A. L. Brooke, the newly elected head of the American Association of Nurserymen, claims as the place of his nativity, Ohio, the mother of presidents. It was at Lancaster upon November 29, 1847, that Mr. Brooke made his entrance in the community in which he lived during the early years of his life. He was a farmer's son but was accorded a collegiate course and studied classics at Wittenberg College at Springfield, Ohio, after which he was for ten or twelve years principal of schools in various cities through the state. In September, 1886, Mr. Brooke removed to Topeka, Kas., and embarked in the nursery business, meeting with excellent success. His nurseries now embrace 250 acres. For several years he has been president of the Western Wholesale Nurserymen's Association and is Topeka's American Protective Association representative in the state legislature. Mr. Brooke has long been prominent in horticultural affairs both local and national, having been an active member of the tariff and transportation committees of the American Nurserymen prior to his election to the presidency of the association. President Brooke is enthusiastic over the future which lies before the nursery business in the United States. He reports good spirits prevalent throughout the trade and is confident that it will lead to good results. He anticipates that next year's convention in Chicago will be the largest and most interesting in the history of his association.

Fruits and Vegetables.

STIR THE SOIL IN THE GARDEN.

The value of surface cultivation was never more strongly impressed upon me than during the present season. Moving into a new home, May 1, I attempted to do a bit of gardening. The land had just been graded, and the sand and gravel had been covered with a thin layer of loam, not the most kindly sort of a

medium for growing plants. In no place was there any considerable depth of soil, and the subsoil was not of the right nature to retain moisture. For the first few weeks we had plenty of rain, and the plants in the flower and vegetable gardens obtained a good start. A month of dry weather followed this rainy spell, and the plants began to suffer. A portion of the garden was cultivated after the last heavy rain storm. Four or five days later on making a tour of the garden I found that where the soil had been stirred there was plenty of moisture an inch below the surface. Where the rake had not been used, the soil was dry for the first three or four inches, much too great a depth of dryness for the young seedlings to withstand without injury.

Too many people stir the soil only for the purpose of destroying weeds. It is probably far more important to cultivate for the purpose of saving for the plants moisture that would otherwise be lost by evaporation. Perhaps we should never have learned this lesson but for the weeds. Prof. Bailey says: "Weeds have always been the best friend of the farmer. They taught him how to till the soil, and they never allow him to forget the lesson."

The principle is an old one, but many people yet have it to learn. Water rises to the surface of the soil by capillary attraction. From the surface it goes into the air in the form of vapor. By stirring the surface soil the particles of earth are separated to such an extent that the moisture is not drawn between them by capillarity. Hence it is obliged to remain a little below the surface and does not evaporate so rapidly.

In order to conserve the greatest amount of moisture the soil should be stirred soon after each heavy rain. If no heavy rains occur frequent cultivation should be practiced. During a season of severe drought a frequent stirring of the surface soil will often enable plants to survive which would otherwise die for want of moisture. W. E. BRITTON.

PREVENTION OF PEACH LEAF-CURL.

Many persons attribute the thickening of the leaves of the peach, which has been so common the past two years, to the effect of cold, wet weather, but that it is of a fungus nature has been fully demonstrated, although it is not likely to occur except when the weather is cold and wet soon after the leaves appear. As a rule it is much worse upon light than on heavy soils, and may be very destructive to some varieties, while others practically escape. Alexander, Hale and Smock are not much injured as a rule, while Elberta, Oldmixon, Mountain Rose, Stump and the local varieties like Early Michigan, Lewis, Kalamazoo and others seem particularly subject to attack. The leaves begin to thicken and roll soon after they open, and if the attack is a severe one all may drop from the trees. If only a few leaves fall there will be little effect upon the crop, but in some cases not only does all of the fruit drop, but the tree will be so greatly injured that if the attack is severe for three or four years in succession it may be killed.

As long ago as 1892 good results were found from the use of fungicides as a preventive of this disease, and repeated tests by the experiment stations of a number of states, as well as by a large number of fruit growers, have demonstrated that at a slight expense this disease can be held in check. The failures that have been reported have undoubtedly been due to the fact that the applications were not

thorough enough, or that they were delayed until it was too late to do any good.

It seems to be fully demonstrated that the best results cannot be secured unless the spraying is done several weeks before the growth starts. Thus trees sprayed in March have showed little if any injury from curl, while those sprayed as the buds were opening showed fifty per cent as much injury as others unsprayed.

From several years' experience the best treatment seems to spray the trees before the first of April either with Bordeaux mixture or copper sulphate solution, one pound to twenty-five gallons of water, and then, as soon as the blossoms have fallen, using Bordeaux mixture. When the spraying is thorough enough to reach every part of the trees the above treatment will be found entirely effective, and the result of the spraying will not only prevent severe injury to the trees, but will secure a crop of choice varieties like Elberta in seasons when the fruit on unsprayed trees has been lost.

L. R. TAFT.

QUALITY IN STRAWBERRIES.

How fine quality in fruits is lost sight of and submerged in the desire to get something that will turn out the boxes, baskets or barrels in quantity! The large grower must cultivate the variety that bears well, ships well, and whose appearance will make it sell well. For example, the Ben Davis is probably the most profitable apple grown at the present time in the United States. Under the most favorable conditions "fair" is the most that can be said of its quality; and when poorly grown a descriptive adjective seems yet to be wanting. Is not the same practically true of Kieffer pear, Marlboro raspberry—though now being superseded—and Bubach strawberry? If one has grown Middlefield or Prince of Berries, how one yearns for their rich lusciousness when restricted to Bubach, Beder Wood or Warfield. It seems to me that every seller of strawberry plants should offer a selection to the amateur and another to the professional grower, so that the one may buy quality and the other indulge in quantity.

These thoughts were impressed upon me in looking over the varieties under test in the Cornell Experiment Station grounds. The following are some berries that would appeal to the amateur; of medium size, round, crimson, glossy, with prominent seeds and, like most berries of this type, very high flavored: Carrie, a seedling of Haviland, with dark green, healthy, deeply cut leaves; berries pointed or conical, glossy, dark red, fairly firm, rich and luscious. It may be that Carrie will be prized by the professional who caters to a fancy market. The last berries of the season seem to be equal to the first. Ridgeway is strictly an amateur sort, a medium sized, roundish, conical, dark red berry; good. Marshall is now pretty well known, usually classed as amateur, but occasionally cultivated by the commercial grower, who always treats the visitor to a dish from this patch. It is almost too dark in color, but buyers are beginning to recognize the fact that this same dark color is a pretty reliable indication of good quality. To know how good a strawberry can be, and to realize with Henry Ward Beecher that "while the Lord might have made a better berry than the strawberry, the Lord certainly never did," one should grow Middlefield, but only for home use. Round, bright red; a good example of the

glossy type. Timbrell and Brandywine are amateur berries on account of unattractive color and good quality. Wm. Belt is immensely productive, also of good quality, but not so delicate as those previously noted. When we grow for home use let us grow something toothsome.

JOHN CRAIG.

Ithaca, N. Y.

THE VEGETABLE GARDEN.

"I am pleased with the interest that is now taken in the home production of vegetables," writes E. C. Lindsay, the leading horticulturist and greenhouse man at Duluth, Minn. "Everything grows much faster than farther south and hardy plants will mature here if not planted until they are well along in other states."

"When I came to Duluth a few years ago, I stopped on the Fourth of July at Mackinac Island, at the junction of Lake Michigan and Lake Huron. I was greatly surprised to find a man putting out cabbage plants; surprised, not because he was laboring upon our best observed national holiday, but because I thought that the heads would never mature. However, he assured me that he always planted about the Fourth and always had splendid cabbages. I had set out 30,000 a couple of weeks before in my market garden at Youngstown, Ohio, where I had found that I must plant before June 25 if I was to have my crop mature, and it seemed strange that here, in what I was pleased to regard as 'the frozen north,' things would ripen much quicker than they would several hundred miles farther south.

"I tell this merely to show how much faster things grow here. The plants seem to know that they must hurry up or get nipped, and the cool climate is just the thing for nice, crisp vegetables. There is more enjoyment in one cabbage or tomato that you grow yourself than there is in a carload of the shipped-in ones. Peas are something that every one who has even a little corner of land here should grow, for in the Lake Superior climate they go right along, while farther south it is impossible to grow them in the fall because of mildew. I have seen pea vines here in September that bore flowers, peas ready to pick and also ripe seed."

Miscellaneous.

SAN JOSE SCALE LEGISLATION.

Bulletin No. 74 of the Virginia Experiment Station contains the Virginia law in regard to this pest. It is gratifying to note that one state has adopted common sense measures toward preventing the spread of this dreaded insect. The inspector is given power to decide whether infested plants shall be treated or destroyed, the owner having the right of appeal to the Board of Control of the State Agricultural Experiment Station, but the appeal must be taken in three days. The destruction of the trees or their treatment is to be done under the supervision of the state inspector but at the expense of the owner. Provision is, however, made that the boards of supervisors of any county may bear the expenses of such work within their county if they choose. It is made unlawful to offer for sale, sell, give away, or transport within the bounds of the state plants, scions, trees, shrubs

or vines infested with the San Jose scale and proper penalties are provided for offenders. This latter provision is the "meat in the cocoanut." It is certainly reasonable and right to require dealers to make sure their stock is clean and to punish them for selling any which is not clean. No certificate subterfuge is provided.

RELATIVE MERIT OF BULBS.

The *Gardeners' Chronicle* of June 11 contains the following account of a bulb election recently instituted by the Dutch Bulb Society:

HYACINTHS.			
<i>Red and Rose-Colored.</i>			
Votes.		Votes.	
Moreno.....	268	Fabiola.....	108
Lord Macaulay.....	235	Gertrude.....	107
Charles Dickens.....	187	Sir John Foxburgh.....	107
General Pelissier.....	172	.....	only 1 vote
Garibaldi.....	164	.....	.....
<i>White Colored (Single and Double).</i>			
Votes.		Votes.	
L'Innocence.....	283	Mina.....	211
Mlle. v. d. Hoop.....	278	Blanchard.....	102
Bar. van Tuyll.....	215	.....	.....
<i>Blue (Single and Double).</i>			
Votes.		Votes.	
Queen of the Blues.....	183	Grand Liliass.....	101
Czar Peter.....	150	Captain Beaton.....	99
Blondin.....	113	Baton van Tuyll.....	99
Leonidas.....	108	Lord Melville.....	89
<i>Yellow (Single and Double).</i>			
Votes.		Votes.	
King of the Yellows.....	191	McMahon.....	68
Obelisque.....	89	Koenig van Holland.....	38
<i>Purple (Single and Double).</i>			
Votes.		Votes.	
Sir William Mansfield.....	129	Lord Mayo.....	50
L'Unique.....	52	Lord Balfour.....	49
<i>Tulips (Single Early).</i>			
Votes.		Votes.	
Prins van Vostemite.....	322	Gouden Standaard.....	211
Silverin Standaard.....	304	Witte Falk.....	200
Mor Tesor.....	288	Jagt van Rotterdam.....	199
King of the Yellows.....	273	Duc van Tholl (rose).....	179
Coeur Cardinal.....	272	Maas.....	171
La Belle Alliance.....	257	Van der Noet.....	171
(Waterloo).....	257	Duc van Tholl (white).....	169
Rembrandt.....	235	 (crimson).....	166
Nelly.....	231	Koningin der Neder.....	166
Duc van Tholl (yellow).....	223	.....	166
Brind van Haarlem.....	222	Pottebakker (yellow).....	156
Le Matelas.....	218	.....	.....
<i>Tulips (Double).</i>			
Votes.		Votes.	
Couronne d'Or.....	340	Rex Rubrorum (var.....	141
Titan.....	334	iegated).....	139
Gloria Solis.....	231	Fluweelen Mantel.....	135
Couronne des Roses.....	196	Geleeros.....	134
Rubra Maxima.....	191	Leonardo da Vinci.....	124
Blanche Hative.....	175	Lord Beaconsfield.....	113
El Tornado.....	160	Le Blason.....	113
Wilhelm III.....	156	Luerotia.....	113
Mariage de ma Fille.....	155	Parmesiano.....	104
<i>Tulips (Various).</i>			
Votes.		Votes.	
Parkiet Perfecta.....	140	Gouden Kroon (sin.....	97
Adral von Con.....	117	stantinopel.....	85
.....	.....	Picote.....	80
.....	.....	Bouton d'Or.....	80
<i>Narcissi.</i>			
Votes.		Votes.	
Golden Spur.....	136	Her Majesty.....	36
Poeticus Ornatus.....	85	Bicolor Victoria.....	35
Henry Irving.....	74	Trumpet Major.....	30
Albus Plenus Odoratus.....	41	Poeticus.....	29
Bicolor Grandis.....	38	Barri Conspicuous.....	28
Von Sten (double).....	37	.....	.....

NOTES AND COMMENTS.

The transformation of Robert Craig & Son's place from a bower of floral beauty at Easter-time to one of leafy luxuriance at the present time is very nearly complete.

Mr. Robert Craig has come to the conclusion that the best kind of a house in which to grow *Cocos Weddelliana* is a very dark one. When crowded for room for Easter flowering plants, the cocos were put temporarily under the benches along the side of the walk, and they now are wearing a dark, rich shade of green, evidence that the partial darkness suits them.

Mr. Craig, Sr., relates that he recently saw in a lady's home one of the very best

cocos of the species under consideration he has ever seen, and it retained a beautiful, rich dark green color, which he can account for in no other way than that it is growing in semi-darkness, as the place it occupies is several feet from a window, and the plant has been in the same position for several months.

This fact when generally known ought to simplify the growing of this favorite and graceful little palm, and at the same time stamp it as one of the very best plants in the whole list for home adornment. Another experiment the Messrs. Craig are putting into successful operation is the planting out on tables under glass of a number of our best known and most useful decorative plants, such as, *Kentias*, *Pandanus Veitchii*, *Livistona rotundifolia* and the celebrated Boston fern.

In comparison with plants of the same age, the *L. rotundifolia* growing in pots and those planted out, the latter were fully one hundred per cent better than the former, being broader in the leaf, yet retaining that compact appearance for which it is noted, and at the same time possessing a more thrifty appearance generally.

In a recent issue of the *Gardening World* reference is made to "a beautifully arranged and highly colored group of crotons," exhibited at the Temple Show by the well known firm of Messrs. James Veitch & Sons, and among the varieties named are many which have proven the most satisfactory in some parts of the United States for outdoor bedding; as, Baroness James de Rothschild, Evansianum, Queen Victoria, Hawkeri, Emperor Alexander III, and Mortii. During recent years there has been an increased call for these gorgeously beautiful bedding plants. In addition to the varieties above named, Dayspring, Irregular, Rubro-lineatum, Fasciatus and Aurea Maculata are good for bedding. The last named is more especially suitable for the edge of beds, being one of the small-leaved section, with green leaves spotted with bright yellow.

Among the newer zonal pelargoniums the Mme. Bruant has made a very favorable impression upon everyone who has seen it. It is quite distinct from anything in this class, the most distinct since Souvenir de Mirande made its appearance nine or ten years ago. The flower is white, veined and distinctly edged with a bright yet delicate shade of solferino; it is very pleasing to look upon and ought to make an excellent market variety. It appears to be a thrifty grower and a free bloomer, with trusses of large size. Whether it will succeed as a variety for outdoors remains to be proven. It is well worth a trial.

Mr. Albert M. Herr says he is trying quite largely for next winter's carnation campaign some of the latest productions in new varieties—seedlings raised in California. I hope he will meet with more success than I did some years ago when experimenting along the same lines. Mr. C. Joseph Haettel sent a number of varieties for trial selected from the standpoint of the Californian and the best the California climate produced at that time, but not one among them proved to be of any value with us. Louis J. Haettel was a seedling of his, and met with some success in some sections. It was a white with deeply serrated petals and was quite fragrant. This variety, I think, was sent out by H. A. Dreer, and was also tested by the late Chas. T. Starr, and proved to be the most satisfactory, so far as I can learn, in and near Albany, N. Y.

Carnations do magnificently in California. I remember in the seventies a Mr. Murphy—I think that was his name—who brought them into San Francisco literally by the bushel from his gardens located on the bay near the Presidio. Plants in one season would make a growth on an average of not less than two feet across. California, in many parts of that favored state, has an ideal climate for the successful development of carnations, but whether the varieties produced under the very dissimilar environment to which they will be subjected in the less favored eastern states remains to be proven. Many of the varieties which I tried were raised near Redondo beach, while others were produced in Piru. I hope Mr. Herr will have flowers of the California seedlings on exhibition at some of the meetings of the Florists' Club of Philadelphia next fall and winter and also at the meeting of the American Carnation Society to be held in the Quaker City next February. E. L.

THE PLANTING OF CEMETERY LOTS.

Cemetery planting, when attempts are made to follow so far as possible the wishes of the individual lot owners and at the same time not violate the general plan of the cemetery, is an exceedingly difficult matter and is nearly always a failure, artistically at least. The difficulties are so great that most cemeteries have given it up as an impossibility and allowed the lot owner to practically go as he pleases, subject only to a few general rules. Some few have taken the matter entirely out of the hands of the lot owners and allow nothing except with a view to general effect and without regard to its relation to individual lots. The former method results in a crazy patchwork effect, while the latter is too apt to estrange the lot owner and destroy his active interest, removing any sense of personal responsibility on his part.

The American cemetery superintendents as a rule are extremely well posted and intelligent men, and without exception ready and willing at all times to give the lot owner contemplating improvements, the benefit of their knowledge and experience, and every one of them are anxious to have their cemeteries as a whole and each individual lot in the best possible condition. The ideal method of handling this perplexing question would be by friendly consultations between the lot owner and superintendent and in avoiding subjects which would be out of place, selecting only such as would enhance the general beauty of the grounds as well as each particular lot. There are some few lot owners in every cemetery who will do this, but they are in a small minority. The great majority fail to recognize their own absolute lack of knowledge, and, ignore the fact that a lifetime study of this class of work by an intelligent man entitles his opinion to careful consideration.

It may be said that by the establishment of rules the ignorant and obstinate lot owner may be forced to consult with and be guided by the superintendent. Unfortunately the courts do not look with favor on such rules. They fail to take into account the community of interests that exist in a cemetery, and that an unsightly piece of planting in one lot is as damaging to the adjoining lot as though it were planted on the latter. Their tendency in decisions, nearly always, is to guard jealously what they are pleased to term the property rights of a lot owner, and they will not uphold a rule which is not general in its effect. For instance, a

rule prohibiting the planting of elm trees anywhere in a cemetery would be upheld, while a rule prohibiting their planting, except where the cemetery authorities consider advisable, would, if tested, probably not hold, the idea being that if one lot owner is allowed to do a certain thing, all must be given equal liberty.

A false sentiment is often responsible for exceedingly bad planting. The fact that a deceased friend had an especial admiration for some variety of tree or shrub or flower will cause a lot owner to insist on planting it in quantity in the most unsuitable locations. Any protest on the part of the superintendent will cause him to be considered a hard hearted monster and bring forth as a response, "I have bought and paid for the lot and shall do as I please." The outside gardener is also responsible for much of the bad work done, sometimes through ignorance or carelessness, but more frequently, through deliberate disregard of everything except his wish to dispose of a quantity of his plants at a good price. Many who have fairly well-planned and well kept residence grounds, and hence feel themselves perfectly competent to superintend their own cemetery planting, fail miserably, through a lack of appreciation of the different conditions. The average cemetery lot is not over eighteen feet square, probably of a considerably less area, and this small plot has no fence and no background against which to mass groups. All planting is viewed from every direction instead of from one or two as in a majority of the residence lots.

The owner generally visits the place but a few times in a season, hence the care devolves upon the cemetery management, who are unable to give the minute attention to little things and the daily inspection and care which are naturally given on his home grounds, except at an expense entirely beyond the ability or inclination of the lot owner to pay. The cemetery lot has no protection from buildings and fences. Trellises, stakes and the like, as they soon decay and are not repaired or replaced by the average lot owner, are tabooed. These conditions, their lack of space, lack of background—lack of protection and, to a certain extent, lack of care, inability to use trellises and stakes, and more than all else, regard for the general appearance of the grounds and a decent respect for the rights of adjoining lot owners—forbid the use of a large proportion of the plants, shrubs and trees which are so beautiful under other and appropriate conditions.

The fortunate owner of a larger plot has a somewhat wider range for choice, but it is still limited. The most common mistake made is in planting too many things; next, in planting those which reach too great a size; then in planting those unsuited to the conditions of soil, sunshine or shade and moisture, careless or improper preparation of the ground and slovenly execution of the work, poor grouping and imperfect color combinations where flowers are used. W. N. R.

FROM RADISHES TO ROSES.

"I began as a market gardener," said a florist who makes a specialty of mignonette in a recent conversation with the *Rural New Yorker*. "Changed trade conditions caused radishes and beans, sweet corn and potatoes to be unprofitable crops and as an experiment I tried a house of violets. The first crop was not a financial success but I tried again and was more fortunate. Then I built two more small houses and have since natu-

ally drifted into floriculture on a wider scale. My product is sold through commission men just as my vegetables were. The New York cut flower trade is the most critical and exacting in the country, and to be quoted at top prices, any flowers, roses, carnations, violets, or whatever they may be—must be graded so as to be of even quality, carefully packed, and shipped early in the day. My flowers reach the commission man by 6:30 a. m. and are usually sold by 8.

"I soon found that the flower trade was far more exacting than trucking. I had to learn, when cold, foggy weather set in, that I could not make up for the lack of sun by extra heat; I tried it and got a bad case of red spider for my pains. Violets are always favorite flowers but they are grown in such quantities that one must raise a superior article to insure any return. The single violets are first in the market in the fall and the varieties I grow are Luxonne and California, with Lady Hume Campbell for double. The Marie Louise is a good double but the Campbell does not seem so subject to disease.

"I took up mignonette and carnations because I thought that I could grow them cheaper than I could roses but I soon found that successful carnation culture demands first-class houses especially suited to their needs. Mignonette thrived in a cheaper house and I grew smilax quite successfully. Mignonette requires a good strain of seed and the lateral shoots must all be pinched off, throwing all the strength into one main spike. Most growers say that there is no money in mignonette, and certainly there is not if carelessly grown, but I am not willing to give it up. Similarly, it is considered that smilax does not pay as it once did, because it has been supplanted by climbing asparagus, but it still pays me.

"The florist's trade is now so specialized that a man can not spread over a wide range of ground. The plant trade and cut flower trade are entirely separate branches. There is quite a difference, too, between growing plants for a local retail trade and for the wholesale market. Each demands a different class of material.

"If a man were to begin a retail business in a small town he would best start with bedding plants from seed in February, March and April. Pansies could be sown in August and again in February. They always sell well. He could keep violets, sweet alyssum, forget-me-nots and similar flowers in frames. As soon as he could build a small greenhouse, heated by hot water, he could grow carnations, alyssum, forget-me-nots, smilax and stevia, and in a separate compartment, he could propagate geraniums, ageratum, coleus, heliotrope, etc., moving the overflow into hotbeds as soon as permitted by the weather.

"He would better not try roses until he could give them a separate compartment with abundant light and heat, although he might do well with some of the less exacting ones, as Bon Silene, Safrano and Niphetos. The best of the flowers which can be grown outside for cutting are pæonies, irises, lilies, gladioli, coreopsis, cornflowers, phlox and other hardy herbaceous plants.

"There is practically no school in which the trade may be learned although the Missouri Botanic Garden maintains a course in gardening and floriculture. The best plan for a beginner is to secure a position in a florist's place. He will have plenty of hard work and is very likely to get discouraged, but the knowledge he gains will be practical."

WINDOW BOXES.

Referring to window boxes, a recent English writer comments: "There is one feature about these objects of domestic floriculture that merits special notice. It is that they do not, when on sills looking to the highway, exist solely for the pleasure of the owners. They are as pleasing to every passer-by who loves flowers, and who does not? A prettily dressed front window, and where there is a pretty front garden also, furnishes much charm to the house and beauty to the locality. Wherever we are privileged to see flowers growing in windows, within or without, or in the forecourts, conclusive evidence is furnished that amongst the inhabitants within reigns a high range of taste and refinement. Whether flowers be or be not refining and humanizing, most certainly they are evidence of the existence of better human nature than commonly prevails where flowers are not. Window boxes are elements of floral decoration not at all difficult to obtain. Wood is, on the whole, the best material, and can easily be made to exactly fit the window-sills on which they are to stand; whilst plain, if substantial at the back and ends, they may be moderately decorated with moulding or lattice work in the front; but as the object of the planter should be to drape the front with plant growth as far as possible, the nature of the box face is of little moment. For hardy plants few things are more in keeping to drape the front than creeping jenny or periwinkles, or some of the smaller-leaved ivies may be utilized, and for tender plants free-growing lobelias, petunias, musks, especially *Campanula isophylla* and *C. fragilis*, and ivy-leaved pelargoniums, are all first-class plants for such purpose. As to how the boxes shall be filled, the season of the year and the range of material at disposal should determine. In the winter a few small conifers or shrubs, some spring blooming plants, a few bulbs, anything indeed that will give leaf effect all the winter and bloom and beauty in the spring. As to the summer, there is endless variety, but in all cases too much variety and color should be avoided.

TEXAS STATE HORTICULTURAL SOCIETY, COLLEGE STATION, TEXAS.—The State Agricultural Congress, held July 13 to 15 was the occasion for this society's annual meeting.



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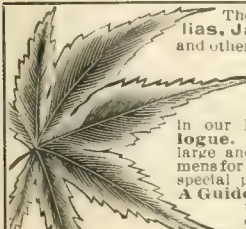
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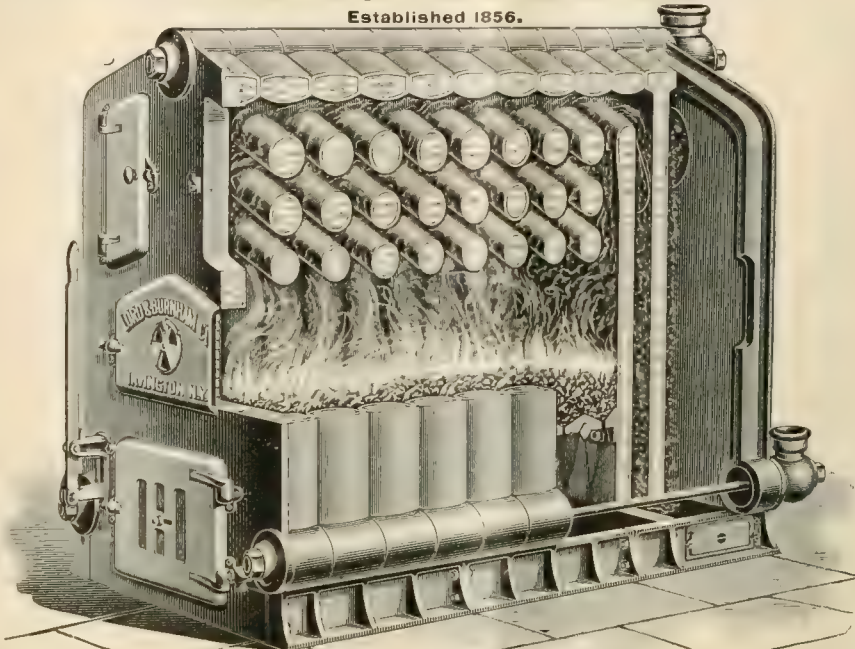
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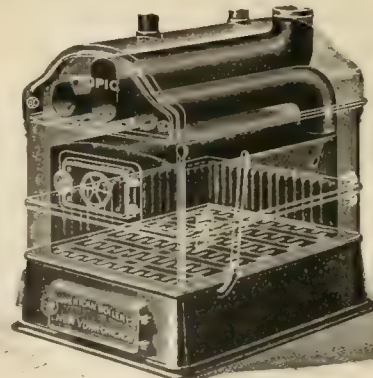


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No. 142.



NATURE'S GROUPING.

Trees and Shrubs.

NATURE'S GROUPING.

Our illustration shows an excellent example of nature's grouping, one having breadth, excellence of detail and, withal, unity of design. At the base of abruptly rising ground the scar of a little land slide is faced by a well balanced group of common elder and sumach, both handsome decorative shrubs that are suitable for use in certain parts of home grounds. Up the steep bank back of this group a mass of climbing wild roses scramble. In the middle distance a single shapely tree breaks the sky line, while on one hand, by means of a low, branching oak, the shrubbery is carried on to meet a larger plantation along the brow of the

hill, and on the other a specimen sycamore of symmetrical form balances the planting. Even the single tall weed, and "the fennel, with its yellow flowers," that carpets the bottom land in the foreground, are agreeable features in the picture and serve to show how more desirable herbaceous perennials may be effectively used to blend some parts of a shrubbery plantation with surrounding lawns.

FANNY COPLEY SEAVEY.

NEW HYBRID CLEMATIS.

I have seldom made an addition to my garden that has afforded me so much satisfaction as have the two hybrid clematis, Duchess of Albany and Countess of Onslow. To Messrs. Jackman & Sons, of Surrey, England, are we indebted for the introduction of the *Clematis Jackmanni*, that has caused so great

pleasure to its owner, when free from the mysterious disease so prevalent, and so much sorrow at its loss when afflicted. To them we are now indebted for a new variety that should not only prove hardy but be entirely free from disease. They have crossed our native Texas *Clematis coccinea*, a variety of *C. Viorna*, with Star of India. This latter is a hybrid belonging to the large flowered *Jackmanni* type.

The flowers of *C. coccinea* have been classed as scarlet, as its name implies, and again as a vermilion, and are composed of four fleshy sepals, campanulate at the base and sharply pointed at the tips, which are somewhat reflexed resembling a vase that broadens out from the base draws in at the neck and spreads out at the top. The flowers of Star of India open out flat and are in color, a reddish plum, with red bars down the

center. Here we have two entirely opposite forms of inflorescence as the parents of this new variety and as might be expected the result produces a flower intermediate in form, and very pleasing in appearance. Duchess of Albany is a beautiful soft pink, deepest down the center of the petals, which are four or five in number. It forms a flower about one and one-fourth inches long and one and three-fourths broad at the top, campanulate and closely resembling a partly opened flower of *C. Jackmanni*. Countess of Onslow is slightly larger, composed of five or six petals, and of a color that I would describe as a deep pink carmine in the center. It has the same form as the other, but is slightly larger. The foliage partakes of the character of *C. coccinea*, a feature strongly in its favor as indicative of the same immunity from disease. Both of the plants I obtained from Messrs. Jackman & Sons have grown about eight feet, and are blooming very freely. They are an entire departure from anything we have had before and I am sure that they will become quite popular when better known.

W. C. EGAN.

LAWN AND GARDEN NOTES.

It is a common occurrence that those who plant trees of red-colored foliage are disappointed at first that the color is not so bright as expected. It is not well-known that trees and shrubs of this class rarely take on their true red color until the second or even the third year after planting. I recently saw a striking illustration of this. Two lots of the Colorado blue spruce, *Picea pungens*, were near each other. One lot was planted two years ago, the other three. Though all had been grafted with cions from the same trees, no one would have thought it, so much deeper blue were the lot that were first grafted.

There is a shrubby lespedeza in flower now, having much the same flowers as the *Desmodium penduliflorum* of gardens, which is herbaceous. There is much confusion of names in the case of these shrubs. Those who have the plants can set themselves right by watching the seed pods. Lespedezas are one-seeded, while desmodiums have several seeds in the one pod. *Desmodium penduliflorum* is a lespedeza of some kind. I will watch the shrubby *Lespedeza bicolor* this season, to see if it has been correctly classed.

How very useful are the species of bignonias at this season. The common trumpet vine is met with in two colors, red and scarlet. The latter is the one catalogued as *B. Thunbergii*. *B. grandiflora* is the Chinese form. This has flowers of yellowish red, larger and with shorter flower tube than the others; all flower now. The *grandiflora* has its flowers much more in a panicle than the others, which have theirs in clusters. Treated as half shrubs or as standards, shapes attained by the aid of stakes, they greatly beautify the lawn at this season.

The *Horenia dulcis*, which is in bloom now, is from Japan and is still uncommon in cultivation. The tree itself has a slight look of the mulberry. The flowers are white, in flattish heads. Clusters of berry-like fruit succeed them.

I think *Clematis paniculata* outranks everything in its way, but we cannot do without the old sweet-scented *C. flammula*, if for no other reason than that it flowers in early July, many weeks ahead of *C. paniculata*.

After giving us its lovely heads of white flowers, among the earliest of all the

shrubs of spring, *Viburnum Lantana* is now adorned with clusters of attractive looking berries. The three stages of color are seen on the same cluster, green, black and red. Besides its other merits it is just the shrub to flourish in limestone soil, where it does its best.

Koeleruteria paniculata is now displaying its huge panicles of yellow flowers. This, too, is a valuable midsummer bloomer. An English gardening paper recently said of it that it could be readily propagated from root cuttings. It seeds here so freely, and the seeds grow so readily, that there is no need to propagate from roots.

The dwarf horse chestnut, *Æsculus parviflora*, is just going out of flower. It is an invaluable shrub for this season of the year. Set out as a single specimen, it gives the most pleasing effect. Three years ago, when visiting the south of England, I saw *Æsculus Californica* flowering in July. This would be a good companion to *A. parviflora* in localities where it would prove hardy. These two are often catalogued as paviors, but the latest authorities make them true horse chestnuts.

Considerable inquiry has been made of late for that good old white, *Rosa microphylla*. It has luxuriant, shining foliage, is of a half climbing nature, very hardy and bears clusters of lovely white flowers. And quite a good point is that its flowers are not early, but come after most of the roses are over, about

July 5, and in this way escape the dreaded rose bug.

A gardener here told me that lime water mixed with tobacco water kills all kinds of insects on plants which he syringes with it. The lime, after being well mixed, is allowed to settle, when the clear water is used. A half bushel of lime to a barrel of water and a bucketful of tobacco water makes the mixture. Mr. William Saunders, of Washington, says lime and sulphur whitewashed on trees in winter will kill San Jose and every other kind of scale.

JOSEPH MEEHAN.

Philadelphia.

BECHTEL'S DOUBLE FLOWERING CRAB.

We have been very much impressed with the merits of Bechtel's crab as an ornamental tree of medium size. As a single specimen it develops into a very shapely tree of interesting form. Its disposition to bloom when quite young is remarkable. The blooms from which the accompanying illustration was taken were from a plant not two and a half feet high and the second year from a root graft. This little tree was literally covered with blooms, giving the appearance of a mass of medium sized roses of a pleasing blush color, and to carry the simile farther, the fragrance is singularly tea rose like. Mr. W. C. Egan gave an excellent description and the history of this crabapple in a recent number of GARDENING.

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BECHTEL'S FLOWERING CRAB



IRIS KÄMPFERI AT DREER'S NURSERY, RIVERTON, N. J.

THE BERRY CRABS.

The recently published note on these handsome ornamentals suggests some interesting experience, together with other features of their usefulness. Many types of the *baccata* group were collected by that enthusiastic Russian botanist, the late Dr. E. Regel, of St. Petersburg, who generously sent large consignments of this seed to various scientific institutions in America, particularly to those situated in the colder parts of the country.

A large number of varieties have been grown and tested by the Canadian experiment stations at widely separated points and it has been found that *Pyrus baccata* and a so-called variety, *P. prunifolia* are perfectly hardy at Brandon, Manitoba, and Indian Head, Northwest Territory. Here the temperature occasionally falls to 50° below zero and a temperature of 40° below is usual, yet the two forms mentioned have fruited regularly at these points for two or three years, while nothing else in the apple line has succeeded in even forming blossoms. The trees are dwarf in habit, round topped, branching close to the ground, strikingly distinct from the cultivated crabs of the Transcendent and Hyslop type.

A remarkable feature in connection with these hardy and distinct forms of the crab is the readiness with which they will hybridize with cultivated types of *Pyrus malus*. I was first struck by this in 1887 when I pollinated a few blossoms of *P. baccata* with Duchess pollen and obtained a fair proportion of fertile seed. In later experiments I found as a rule

that one was much more successful in effecting hybridization between these species than in securing crosses between different varieties of the cultivated apple. If reasonable care was exercised fruit set in almost every instance.

In the hope of securing hardy apples for the northwest this work has been carried on to a considerable extent in Canada and many thousand seedlings have been produced, hybrids between these crabs and the hardiest forms of the apple, and are now being proved.

In northern Canada *Pyrus baccata* is also one of the most satisfactory of the early spring ornamentals.

Ithaca, N. Y.

JOHN CRAIG.

The Flower Garden.

THE JAPANESE IRIS.

These beautiful flowers are now attracting considerable attention and will undoubtedly be largely planted for outdoor decoration. While not new the beauties of the Kämpferi types are not known as their very showy and exquisitely lovely blossoms demand they should be. They seem to require no special culture, growing and flowering profusely along with other lawn and garden plants. For cut flower decorations they are very effective for a short time, but their period of usefulness closes with the day as the individual blossom lasts only till sundown. K

HARDY HERBACEOUS PLANTS.

The Toronto Horticultural Society recently listened to an excellent paper by its president, J. McPherson Ross, upon a subject which is of increasing interest to all lovers of hardy herbaceous plants. Following is an abstract of the gentleman's remarks:

Herbaceous is a name commonly applied to all plants with perennial roots and annual stems. As a general thing in the past hardy herbaceous plants have not received the attention they deserve, but I am glad to see that there is a growing interest now taken in them, particularly by the professional gardeners, who as a class have rather despised them. Perhaps this may be attributed to their easy growth, calling for no special care in their propagation or after cultivation. Leaving the profession out of the question, we might say that public indifference is largely due to pure and simple ignorance of their value; but the main reason may be better attributed to the common practice of indiscriminate planting, to that hit or miss style which can be seen anywhere and everywhere with but very few exceptions. It is evident now that this indifference is passing away, for nearly every floral publication issued recently contains reference of some kind about the beauty and value of hardy herbaceous plants. It is sometimes urged that there would be more of them planted if their flowering season were longer, that the majority of them last such a short time in bloom that to have many flowers would require very extensive col-

lections, taking up too much space in small gardens, and that, therefore, their general employment would be most suited for extensive grounds or parks. There is very little in this argument. That we see them fade with regret and turn with zest to the season of flowering of the next favorite, forms, to my judgment, their chief claim to attention.

Then there is the foliage, so attractive in its varied forms and colors. I find also that the artistic delight in color is growing with the public so that there is a real source of enjoyment in the study of the endless scale of greens. At least one very clever gardener assured me that he took almost as much pleasure in comparing the varying shades of the foliage as he did in the flowers. I think, myself, that the renewed interest taken in herbaceous plants is partly owing to too much carpet bedding and ribbon planting with which we have been dosed so heavily during the past twenty years; and really, in many cases, artificial plants would answer just as well as natural ones in the formal arrangements where the individual characteristics of the flowers are lost and only the color effects shown, which could also be more easily and just as satisfactorily secured by painting the various forms on the sod with colored calcimine. We turn with relief to our herbaceous plants after this exhibition of floral fireworks. No other system is so effective in displaying the beauties of herbaceous plants as that of grouping each kind in masses without definite form. Always avoid circles, squares and rows, and by keeping this in mind when planting collections you will produce the effect of the plants growing and spreading naturally. The various kinds can be cultivated just as conveniently by the commercial grower in irregular masses and systematically labeled and dug for packing and shipping in the selling season as if they were grown in straight rows. In this way they also are shown in the most attractive manner to a customer, and the most suggestive for his or her own planting.

A proper selection of the different species will give us flowers from earliest spring to latest fall, forming a constant source of pleasure and gratification to the grower, so that starting with the earliest flowering dwarf irises, pansies, forget-me-nots, the sprightly daisy, *Phlox subulata*, the graceful racemes of the bleeding heart, and many others, we have nearly two months of flowers before it is safe to plant out such greenhouse stock as coleuses, geraniums, etc. Besides the renewed interest now shown in well known varieties of herbaceous plants, there is also a general awakening to the fact that many of our native wild flowers are exceedingly beautiful and deserving of a place in our gardens. The hardy trillium is eagerly sought after and brings high prices in Europe, also the dog's tooth violet, hepaticas, lady slippers and many other native plants that heretofore received but slight attention are now collected and grown with zeal and care. This popularizing of the neglected herbaceous plants will be productive of good. New varieties will be produced at a rapid rate, and as an example we may note the endless varieties of the columbine and poppy now in cultivation. We cannot yet estimate the value of herbaceous plants. In order to do this accurately we must consider their hardiness, the small amount of care required after planting, their adaptability to any situation, thriving in poor as well as rich soils, sandy or clay. Then there is the question

of expense, their low cost and permanence often rendering them preferable in comparison with our bedding plants which require renewal every season. In herbaceous plants we do not lack for contrasts in growth, for in size we find in the plants, from the dwarf phlox to the gigantic polygonums, every variety of color and form of bloom and foliage. In this assortment we find plants suitable for any location, small beds and borders in the contracted city lot as well as large plantations on big estates and public parks.

It would be impossible in the limits of this paper to fitly describe the beauties and characteristics of each plant, or even to mention without description the numerous varieties. The subject is entirely too large to be treated in one evening as there is an abundance of interesting matter to make a paper on herbaceous plants



CANTERBURY BELLS

alone for every meeting of the society. The flowering season of these plants, in many cases, can be prolonged by cutting back the old flower stems, which will have the effect of throwing out new flower spikes later on. This is true notably of phlox and larkspurs. It is not necessary to mention soils most favorable for their growth, for as I said before, the majority of them will grow anywhere, though like everything else they rejoice in a rich clean soil and in all other good conditions of it. Nor have I much to say regarding their propagation, as they grow so freely from division that it is not necessary to go to the trouble of raising them from seeds. There is no special call for art or skill in their planting or proper disposition. In such a case the purchaser of plants would be required to learn the habit and nature of each so as to plant the creeping or dwarf growing plants in

situations suitable for them; as for instance, the moneywort on rockeries, margins or borders, the moss pinks on hillocks, etc. The rule most generally followed in planting early flowering species and varieties is to put them in the most conspicuous point of observation, such as by the gateway or in the border by the pathway leading to the residence. This desire may be explained by stating that there is almost an anxiety on the part of everyone to show early flowers, and after the long dreary days of winter it is a positive pleasure to see the first flowers of spring. Tall growing plants are usually placed in the back of the border next the buildings, trees or fences or in the center of large groups, as the case may be. Where the grounds are large enough to permit it, the grouping of thirty or forty plants of one species together makes a fine effect; a large bed of pæonies, for example, produces a very fine effect in themselves. A bed of hollyhocks with *Bocconia cordata* in the center, then a broad circle of pæonies, next irises or campanulas, then *Achillea aurea* or *Spiræa filipendula*, finished off with an edge of cerastium always commands admiration. Of course, other and better combinations may be made, but it is always best not to observe uniformity.

CANTERBURY BELLS.

The Canterbury bell (*Campanula Medium*) is a very common but extremely showy border plant. I very well remember the first time I saw it, and my impression then was that there could be nothing more beautiful; but since I have made gardening my life's work, I have sometimes thought Canterbury bells a trifle coarse. But like the chrysanthemum, their season of bloom is short, so that we do not have time to become satiated.

We make a sowing of seeds in the open border early in June. Our plants are now ready to be transplanted into nursery beds one foot apart. By the autumn they make large plants, with a central and frequently a circle of secondary crowns. About three dozen of these are put into 9-inch pots, to be held over in cold frames. They are brought along slowly in the spring time for piazza decoration during June. A neighbor of mine forces a dozen or so every year, getting some of them into bloom by Easter. To accomplish this he places his plants in a carnation house during January. A peculiar result of early forcing is that a small percentage refuse to start, indicating the need of a longer resting season. Such as come to a standstill in this way always hold over until another season.

The bulk of our plants are intended for border decoration and are especially useful for filling vacant spots in the borders. They are not taken up until spring. The lifted plants have never flowered so well as the surplus left in the nursery. From this I conclude that better results would come from planting the seedlings directly into the borders where they will remain to bloom. I do not consider the calycanthema or double varieties superior from a decorative point of view. I have always grown Dean's single hybrids; they are quite hardy, though a little protection will save more of the foliage.

T. D. HATFIELD.

GODONOPSIS CLEMATIDEA.

It is surprising that this deserving plant has not found its way long ago into collections of hardy plants. It is very rarely mentioned in catalogues and little has

ever been said about its unquestionable value as a border plant. Like the *Wahlenbergias*, it has a thick, fleshy root, from which the eyes start out in the spring. Young plants do not grow very strong for a year or two; they remain dwarf and decumbent, though they bloom persistently even when small; but when once well established the growth is much more robust, the stems being able to support themselves in a more upright position, and more of them are produced from each root. The leaves are very neat, oval oblong, of a glaucous green, about an inch long and rather closely arranged along the stem. The flowers are produced on the tips of the many slender axillary branches for a long time in midsummer, and resemble those of an ordinary drooping campanula; they are about an inch long and measure about the same across the open part. The color is white, slightly tinged with pale blue, and the bells have a distinct, well defined, star-shaped blackish purple blotch on the inner side at the base of the stout pistil. Along the stronger growth of the older plants, two feet or over in height, the side branches are produced freely, almost at every joint from the ground up to the very tip, and each branch or branchlet is adorned with the dainty bells, which, on their slender support, keep in a constant motion in the slightest breeze. Division is the best way to increase the stock, but seed sowing may be resorted to if it is obtainable, though it takes a number of years for the seedlings to develop into strong specimens, while division usually gives quicker and more satisfactory results. As to the hardiness of the plant, I may say that we never lost one from the effects of frost. Even in snowless winters, with some of the carelessly planted crowns fully exposed to the action of the weather, we could not notice the slightest injury, but it would not hurt them to receive a liberal covering of manure every winter, this material to be forked in between the plants when spring arrives. It delights in rich soil and the growth is stronger there, though we have no trouble and can make it live and flourish even in dry ground by merely taking the precaution to plant a little deeper. An irregular patch in the border, planted among early flowering bulbs, makes quite an acceptable display in summer, and the plants hide the yellow or decaying foliage of their companions effectively, without interfering with the spring show, for they start rather late.

J. B. KELLER.

FLOWERS FOR THE CEMETERY.

White flowers are most in demand for cemetery use and appropriately so, for they symbolize purity. And yet why not represent life and hope as well as purity and plant colors other than white? Brilliant or gaudy flowers would look out of place in the cemetery, and so only delicate colors should be used—a dainty shell pink or a light yellow will be found both beautiful and appropriate. If you wish low growing plants that will bloom constantly, plant the double white achillea or sow seeds of sweet alyssum. The former is a beautiful hardy perennial, bearing double white flowers which strongly resemble miniature roses in the greatest profusion all summer. It is a vigorous grower and will thrive in any situation or in any soil. The dainty sweet alyssum is too well known to need a description. For this purpose nothing could be finer than these two flowers.

That grand old garden lily, *L. candidum*, is also a favorite for cemetery planting.

It bears large snow white, fragrant blossoms and is perfectly hardy. The several varieties of spiraea bear large clusters of delicately tinted flowers. The white and pink colors harmonize well, and when used either singly or in combination, nothing could be prettier than these plants. Then there is the lily of the valley. Who does not admire the exquisite little bells which nod so gracefully on their slender stems? In modest dainty grace and exquisite purity, this flower stands almost without a rival. The lily of the valley is by far the most popular flower we have for cemetery planting.

Many prefer that the beautiful queen of flowers should reign over the last earthly resting place of their loved ones. Perhaps the variety most adapted to this purpose is *Rosa Wichuraiana* commonly called the Memorial rose, which is of a trailing nature. It is of vigorous growth, often making canes ten feet long in a season. The leaves form a dense mat of lustrous dark green foliage, with almost thornless stems. During the month of July this rose whitens itself with a profusion of exquisite single flowers. Borne in clusters, they are quite large and have the delicious fragrance of the Banksian varieties. The many golden stamens in the center of the flower form a pleasing contrast to the pure glossy white of the petals. Madame Plantier is a double white rose that is excellent for planting on graves. Other

splendid varieties are Clothilde Soupert, a delicate pink, Marie Van Houtte, white, shaded lemon, Cornelia Cook, the Queen, and Snowflake, all white. The above varieties are hardy.

Flowers awaken beautiful thoughts and inspire noble impulses. Poets have sung the praises of the rose from time immemorial. Perhaps none has paid a finer tribute to the queen of flowers in its relation to the cemetery than L. E. Landon in the following exquisite verse:

Plant the green sod with the crimson rose;
Let my friends rejoice o'er my calm repose;
Let my memory be like the odors shed;
My hopes like the promise of early red;
Let strangers share in their breath and bloom;
Plant ye the bright roses over my tomb.

Meriden, Conn.

T. D. FOGG.

BEDDING PLANTS.

ED. GARDENING:—Will some of your practical readers give a list of the most suitable material to plant in a circular bed from twelve to fifteen feet in diameter or a foot or two larger if necessary in order to contain a suitable number of plants. Name the plants, give the number required, situation and distance apart. It is desired that the bed be sub-tropical in effect, tall and imposing. The material should be limited to that which may be obtained at a reasonable cost, or raised in a small greenhouse.

Chicago.

J. C. MORGAN.



VASE OF IRIS KEMPFERI.

The Greenhouse.

FUCHSIAS.

The fuchsia, when properly grown, is one of our most elegant indoor flowering plants. It is, to be sure, a very old-fashioned occupant of our greenhouses, but none the less meritorious on that account. There are a great many species and varieties known to horticulture, some rare and interesting, but most of them strikingly beautiful. Riccartoni, a variety of the small-flowered *F. macrostema*, is said to be moderately hardy as far north as Philadelphia, and while a most deserving garden plant where it survives the winter, we prefer some of the more modern sorts for interior adornment. Our illustration shows a plant in a five-inch pot of a variety called Charming, which certainly looks well, although the name is a new one to us. This specimen was grown by Mr. Peter Cronetto, of Millbrook, N. Y., from a cutting propagated last January.

SHADING GREENHOUSES TEMPORARILY.

As I am now busy painting the rose houses, removing the soil and refilling the benches, I have thought it opportune to give your readers the benefit of my experience in making a rose house a comforta-

ble place to work in when the sun is shining brightly on a hot summer day.

My first trial in this line was in 1889. I had just finished two new houses and it was bright, hot weather. We were anxious to get them filled and planted, but it was impossible to work in such a temperature. I suggested wetting the glass and dusting some flour on it. A pan of flour was soon procured and dusted over the house. We filled and planted the house in comfort, wondering, meanwhile why no one had tried the plan before. But we never used it again. It had to be taken off, for the roses would not grow without sunlight, and the time spent on the roof of those houses with soda, hot water, cloths, brushes and putty knives, rubbing and scraping, more than counterbalanced the pleasure and comfort we had experienced working in the shade.

The flour baked into bread and we did not run short of that article of diet very quickly, for it could be found on the glass until the following summer. Since then we have been in the habit of mudding our houses, that is, mixing up a bucket of mud and putting it on with a white-wash brush. This answered the purpose fairly well. A shower, however, is liable to wash it off before the work is finished, and one is then compelled to repeat the operation. But when the work indoors is completed, the weather clerk sometimes forgets that his assistance is needed and

it becomes necessary to ascend to the roof and wash it off. Then, too, it leaves the nice white paint all stained with mud, which will not come off until it is washed by a number of heavy rains.

This season I have been using shading cloth, unbleached muslin dipped in some preparation to prevent its mildewing. The seedsmen all keep it for sale. This we sew together so as to make one piece cover the front of the house and another to cover the back. It is quickly put up and as quickly taken down. Rains will not hurt it, and with care it ought to last several years. But if it only serves one year it will be a good investment, for the men with its aid will do the work in so much less time as will pay for the material, not to speak of the comfort in doing it. With this material in place, and the front and top ventilators wide open, the workmen can attend to their duties in the houses with no greater exertion than would be required outdoors in the shade of a tree.

I have sixteen houses to fill and sufficient material to cover two of them. When two are completed, the shading is removed to two others, and it is my intention to proceed in this way to the end. My planting, with less help, is in a more advanced state that it has ever been before at the same date, and the credit must certainly be given to this idea in shading.

JOSEPH HEACOCK.

Wyncote, Pa.



FUCHSIA CHARMING

CHRYSANTHEMUM NOTES.

One of the most important things in caring for the chrysanthemum at this season is to keep them free of black aphid and greenfly. The hot weather we are having now making it impossible to fumigate, we have to resort to spraying with tobacco extract which we find, when used with a little judgment and more as a preventive than as a cure, to do the work well. We use about a wine glass full of the extract in an ordinary bucket full of warm water, allowing it to stand for a few hours before applying with a sprayer late in the afternoon after the sun has left the glass.

Some varieties are more difficult than others to rid of insects and once the pests get a good foothold it is a hard matter to dislodge them. We have found Major Bonnaffon to be particularly subject to greenfly, which seems to thrive well on the young, curly foliage, the formation being such that the insects are sometimes not noticed unless the plants are examined closely. Grasshoppers are beginning to get troublesome and the only thing to do is to catch and kill them the same as with caterpillars which, if not looked after, will spoil the foliage of a plant in very little time.

Specimen plants should be given every encouragement to keep them growing healthfully. Ample syringing two or three times a day is what they delight in, and see that they never want for water. It is time to stop pinching back specimens of the late varieties or they will not be ready for show time. Early varieties can go one or two weeks longer.

Now that the specimens are in their flowering pots they should have a few stakes to spread upon and to protect the branches. Young stock intended for single stemmed pot plants should be removed from the sand as soon as rooted and shaded for a few days, after which they should be placed as near the glass as is practicable, as they need all the light possible and plenty of ventilation. They

should be shifted as quickly as they require it so as to give them ample time to become well rooted in their flowering pots before the time comes for them to set their buds. This will enable them to stand feeding better and hence give more pleasing results.

C. W. JOHNSON.

BEGONIA GLOIRE DE SCEAUX.

The begonia herewith figured is one of the most useful sorts for spring and winter flowering. The stems are stout, erect and from one to three feet high, with leaves dark green, tinged reddish beneath and from six to eight inches in width. Flowers pale pink and one and a half inches broad.

Plants two years old are best for decorative purposes, as they then send out numerous flowering shoots from such portions of the previous year's stems as have been retained. Older plants are not reliable. In propagating I prefer to take the cuttings in spring, if they are obtainable. These will make nice specimens the following spring. Usually, however, it is impossible to procure good material for cuttings until the old plants are cut down later in the year, and when started so late they seldom make fully developed specimens before the second year.

For this and most other winter-flowering begonias I use a rather coarse compost made up of good loam, leaf mold, cow manure and sand, two parts loam to one part each of the other constituents, with the addition of a small quantity of charcoal. Good drainage is very necessary, and during the winter months the plants should be kept in a temperature of 60°.

ROBERT SHORE.

Publications.

BOOKS AND BULLETINS.

ANNUAL REPORT OF THE NOVA SCOTIA FRUIT GROWERS' ASSOCIATION.—Halifax, N. S., 1898.—We are in receipt of the thirty-fourth annual report of the Nova Scotia Fruit Growers' Association, a society which has recently shown remarkable activity in the cause of good horticulture. Among other things we gather that the year 1897 was the least productive of fruit in the past decade, the total export amounting to 85,000 barrels. The high-water mark was reached in 1896 with a total of 500,000 barrels. At the annual meeting, held at Wolfville in January last, many valuable papers were contributed by prominent authorities, and these with the discussions take up the greater part of the volume. One of the most important works of the association was the establishment of a school of horticulture, supported by the members and the provincial government. Tuition is free to all.

VEGETATION AND SCENERY IN THE METROPOLITAN RESERVATIONS OF BOSTON.—By Charles Eliot.—Lamson, Wolfe & Co., Boston, New York and London, 1898.—The Messrs. Olmsted have rendered the public another substantial service in publishing the report of their former coadjutor, the late Charles Eliot, on the condition of the landscape in the territory reserved for park purposes in and around Boston. The summit and swamp types of vegetation, dependent chiefly on topographical conditions, are faithfully described, as are the coppice, field and pasture, the bushy pasture and the seedling forest, features largely influenced by

the interference of man. The various characteristics of the reservations are well shown in numerous maps and illustrations, the whole forming a contribution to landscape literature which cannot fail to be of material assistance to all who are interested in the development of public grounds.

PALMENZUCHT UND PALMENFLEGE.—By Udo Dammer.—Trowitzsch & Son, Frankfurt-on-Oder, Germany.—Many years ago the late Benjamin S. Williams, of London, England, in one of his volumes on stove and greenhouse plants, gave us a very good account of palms and cycads, with some excellent cultural notes. In the interval we have had nothing of this character in similarly compact form, although many interesting and valuable communications on these plants have appeared in the horticultural journals. It is therefore a great pleasure to receive Dr. Dammer's work under the above title, dealing with the propagation and cultivation of palms. Most of the culti-

vated species and varieties are well described and many of them admirably illustrated. Very minute directions are given regarding propagation and culture. The amateur grower will find the directions for the treatment of plants grown in rooms and dwelling houses extremely useful, and the professional gardener is given many practical hints on matters with which he is rather unfamiliar. We rank the book among the most important on greenhouse plants which have made their appearance within the past ten years, especially as palms in recent years have become so popular with all growers of ornamental plants. The text is in German.

TEXAS STATE HORTICULTURAL SOCIETY.—At the recent meeting at College Station the following officers were elected: President, C. Falkner, Waco; vice president, F. W. Mally, Hulen; secretary, E. Huffman, Waco; treasurer, D. O. Lively, Fort Worth.



BEGONIA GLOIRE DE SCEAUX

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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PRESIDENT MCKINLEY's favorite flower is a pink carnation and be always wears one on the lapel of his coat.

C. H. RICHARDSON, horticultural inspector, has removed 6,132 infested trees from 317 vacant lots in Pasadena, Cal. The trees were the breeding places of scale and other pests which were spreading from the neglected grounds to the adjoining orchards.

Dr. A. M. CUSHING writes: "The better way to destroy elm beetles is to twist up a newspaper, set one end afire and singe the tree from the ground to as high as one can reach. Two minutes will complete the operation but it must be repeated daily as long as the insects appear. I tried it last year with fine results."

I. W. KERR, of Maryland, who has 75,000 plum trees advises grafting the plums upon peach roots and planting rather deep to secure rooting of the plum near the surface of the ground. He has an abiding faith in American plums, finding the European uncertain and the Japanese varieties subject to rot.

An elaborate programme has been prepared for the fourteenth annual convention of the Society of American Florists, to be held at Omaha, August 16, 17, 18 and 19. Those who wish to attend can receive information of low railroad rates

on application to the secretary, W. J. Stewart, 67 Bromfield street, Boston, Mass.

Mr. SHORE, of Cornell University, Ithaca, N. Y., reports that hardy roses have done exceptionally well with him this season. Margaret Dickson has been extra fine, and seems to stand the winter in that section best of any. Mr. Shore is surprised that they have done so well, especially as the ordinary garden soil of a sandy nature was given no special preparation. The beds were heavily mulched with well decayed manure the previous fall and forked over in spring.

THE following has been awarded a prize as the best method of ripening tomatoes detached from the vines: "Get a middling air tight box (Australian butter box I find the cheapest and best) put in a sheet of paper to fit the bottom, and then put a layer of tomatoes, one thick, then another sheet of paper, then another layer of tomatoes, and so on for five or six layers. Cover well with paper. Put in a dry place for fourteen days. Even small tomatoes will come to maturity. I have done this two years without fail."

THE good people of Newark, N. J., are justly alarmed at the depredations of an insidious borer which is attacking shade trees. Prof. John B. Smith, the state entomologist, writes that outside of cities birds keep this wood moth in check and that the only remedial measure of which he knows is to inject into the burrows occupied by borers a small quantity of bisulphide of carbon and plug up the hole with putty to prevent the escape of the vapor. Of course this is practicable only on smaller trees, and even then it is an unsatisfactory proceeding.

SILVER and Sycamore maples in the city of Brooklyn are affected by *Pulvinaria innumerabilis*, commonly known as the Cottony maple scale, and the pest is on the increase. Lewis Collins, secretary of the Tree Planting Society, recommends that, as the scale is succorial and not affected by arsenicals, the small, superabundant branches upon which the insect makes its appearance be removed and that the scale, which is turtle-shaped, brown, hard shelled and one-fifth of an inch long when full grown, be carefully picked from the remaining branches. This is practicable when the scale has covered only a portion of the tree.

WILD FLOWERS OF THE ROCKIES.

Cornelius Van Brunt, of New York, recently delivered a lecture before a joint meeting of the Massachusetts Horticultural Society and the Appalachian Mountain Club. His subject was "The Wild Flowers of the Canadian Rockies Amid Their Native Surroundings." Following is an abstract of the botanical part of the lecture:

"A trip over the Canadian Pacific Railway from Montreal to Vancouver, is one of the most delightful to be imagined; and the variety of the scenery and the beauty and novelty of the flora make one's enjoyment increase each day. Last year we took this trip, going in the early part of July and returning the first of September, that we might photograph the flowers then in bloom. East of Lake Superior the flora was mostly familiar to us. Farther west, on the prairies, the flowers were especially brilliant and beautiful.

"Banff was our first stopping place. After the beautiful mountain scenery the thing that most impresses the stranger is the abundance and brilliancy of the flow-

ers and their habit of growing in large communities, as it were. A bill blue with blue-bells, a swamp vivid scarlet with painted cup or brilliant magenta with fireweed, are the rule, not the exception. The most striking novelty about the Banff hotel early in July is the *Zygadenus elegans*, of the lily family, a beautiful white flower growing in great abundance on swampy ground. A swamp near the hotel, which had, earlier in the season, been filled with lady's slippers, habennarias, arethusas and other orchids, now showed myriad specimens of *Tofieldia glutinosa*, the parnassia, senecio, campanula, castilleja and potentilla. *Potentilla fruticosa* might at a first glance be mistaken for a wild yellow rose, so large are both the bush and the flowers. The wild rose of that locality, *Rosa acicularis* var. *Bourgeauiana*—was about through its blooming season. It had covered large areas and must have been very beautiful. Blue clovers, instead of red, white or yellow, were also a novelty to us. The color of one of these, *Astragalus adsurgens*, varied from bright blue to purple and violet, and was most effective. Other plants resembling blue clover were *Astragalus hypoglottis*, *Oxytropis viscidula*, and, most beautiful of all, *O. splendens*, a superb rose-purple head and leaves resembling silvery-colored velvet.

"In July the *Leguminosae* seemed the best represented family. There was the beautiful rose-purple of the *Vicia truncata*, which twines about everything, white and pink *Hedysarum boreale*, *Oxytropis Lambertii*, both white and pink, the graceful and very fragrant *Lathyrus ochroleuca*, with cream-colored flowers and trailing habit, and the brilliant magenta *Hedysarum Mackenzii*—these are a few members of the pea family in bloom during July. *Phaca Americana* was in seed, but almost as handsome as when in flower. A superb blue vetch grew in masses on the shore at the junction of the Bow and Spray Rivers, which has not yet been identified. Under the coniferous trees near Banff the ground is fairly carpeted with *Linnaea borealis*. With it were the dwarf cornel, the one-flowered pyrola (*Moneses grandiflora*), and also *P. secunda*, *clorantha*, and *rotundifolia*. These grew in dry places, but in wet, shady spots the pink pyrola (*P. uliginosa*) was abundant. With it we found *Pinguicula vulgaris* and the delicate, unobtrusive brown lily—*Stenanthium occidentale*—which has a delicious fragrance.

"The Bow River valley, through a glass looked as yellow as gold, and we found that the hue was due to the abundance of *Gaillardia aristata*, which resembles our *Rudbeckia hirta*, though it is more brilliant.

"A most noticeable shrub is *Shepherdia Canadensis*, with its vivid scarlet or translucent yellow berries. *Allium cernuum* and its more noticeable relative *A. Sibircum*, cover large patches of dry hillside. In shady moist nooks *Parnassia palustris* had taken a strong foothold, and a little later in the season the more beautiful *P. fimbriata* appeared.

"The season is so short in this latitude that haste is very necessary if the flowers would fulfill their mission in this world; and in consequence they tumble in and out of life with the most confusing rapidity. Spring flowers and summer flowers and autumn flowers all bloom together, and in such an energetic fashion that we marvel not only at their vigor, beauty and abundance, but even more at their apparently intelligent comprehension of the necessity for speed. A showy weed is the strawberry blite (*Chenopodium capi-*

tatum, and the northern bedstraw, pink yarrow and white; pearly everlasting and the pink everlasting are abundant in the open woods and along the roadsides. In shady places along streams several purple asters grew thriftily, the most showy being *Aster Fremontii*, and along the wet margins of the Bow River is found *Spiranthes Romanzoffiana* in great abundance and beauty. Great clumps of *Pedicularis Grœnlandica* brighten the banks of the Bow River with long spikes of magenta bloom. The pretty, but less showy *Pedicularis bracteosa* is more abundant in wet woods. There are two gentians—the little *Gentiana acuta*, which is a pale lavender, and the sturdy, somewhat coarse *G. Forwoodii*, which is a deep blue, flecked on the corolla lobes with yellow. Along this river also is found that most beautiful flower, the shooting star (*Decaltheon Meadia*).

"Banff owes much of its popularity to the hot sulphur water that issues from Sulphur Mountain. The Government owns many of these springs. The hot overflow from the Government baths known as the Cave and Basin, makes ponds which do not freeze over in winter, and on their borders are found plants which belong to a different latitude. Among these are the smaller fringed gentian (*Gentiana detonsa*) and *Lobelia Kalmii*, not only blooming ahead of time but most of them growing in the warm water. One of the excursions to be made from here is to the "Hoodooos"—curious rock formations—and on a smooth, sandy plateau nearby were three kinds of flowers which nearly covered the ground—*Anemone patens* var. *Nuttalliana*, best known as the pasque flower, *Campanula rotundifolia* and *Hedysarum Mackenzii*.

"A striking feature of the National Park landscapes is the squirrel or fox-tailed grass, *Hordeum jubatum*. Clumps of it are found almost anywhere, but sometimes it takes possession of considerable areas of level ground, and, waving in the wind on a sunshiny morning, is one of the most beautiful pictures imaginable.

"On a drive to Devil's Lake we collected blue flax, larkspurs, red anemone and *Geum triflorum*. These grew on level spaces a little removed from the road. The roadsides proper were crowded with bluebells, fireweed, goldenrod, *Artemisia frigida*, erigerons—pink, blue and purple—*Spiraea betulæfolia*, troximons, gaillardias, pink, white, blue and purple peas, pearly everlasting, and pink and white yarrow.

The summits of Sulphur and Tunnel Mountains were the abode of many small alpine plants, mostly saxifragas and heaths.

"From Banff to Laggan is but a few miles. The railroad skirts the Bow River, whose banks were brilliant with the painted cup, fireweed and patches of the western red lily (*Lilium umbellatum*), just out of bloom. The swamps of Lake Louise were covered with beautifully colored sphagnum, and earlier in the season orchids had been abundant. The woods were filled with a great variety of fungi, many of which were brilliantly colored and fantastically shaped. Lichens covered everything available, and the mosses were exquisite and sometimes very curious. Lake Louise is the most beautiful place imaginable, combining mountains, forest, snow, glaciers, and water and sky, in such proportions as to make it the perfection of scenery. The forests of coniferous trees, mostly spruces, are dark and dense, with long beards of

gray moss falling from their lower branches. The forests about Lake Louise have the advantage of having escaped fires. The most characteristic tree of the Canadian Rockies is neither the balsam nor the spruce, but Lyall's larch, which is found nowhere else. This is the last tree before reaching the snow-line. Its needles being deciduous and turning to a bright yellow before falling, a very noticeable band appears in August above the dark foliage of the evergreens.

"The plants most noticeable about Lake Louise in August were Labrador tea, the white rhododendron and *Kalmia glauca*. Cottongrass covered the glacial meadows at the head of Lake Louise, and here was also *Epilobium latifolium* growing abundantly. *Senecio triangularis* grew on the steep sides of the valley, and was the only species of *Senecio* seen, though at Banff there were several. Here were also *Saxifraga Lyallii*, fireweed, yellow columbine, (*Aquilegia flavescens*), the blue (*A. brevistyla*), and the red (*A. formosa*).

"A pretty little anemone (*A. paviflora*) bloomed almost in the snow. Still farther up the valley on the lateral moraine, a flower garden awaited us. Masses of purple pentstemons, the pink moss campion, the night-blooming catchfly, *Dryas Drummondii*, *Castilleja pallida*, small species of potentilla, a dwarf bluebell, and specimens of a large rankly growing yellow thistle covered the steep slope. At Mirror Lake we found *Arnica cordifolia*, brilliant yellow and delightfully fragrant; *Valeriana Sitcheensis* and erigerons more beautiful than any we had yet seen. In the woods near Mirror Lake were the lovely pink bells of *Bryanthus empetritormis*, and at the upper lake—Lake Agnes—*Cassiope tetragona* and *C. hexagona*. The last pitch of the climb to Lake Agnes was made beautiful by the alpine flowers—*Saxifraga bronchialis*, *Sedum stenopetalum*, etc. *Castilleja*, pentstemons and columbines were everywhere. All around these lakes, wherever there is moisture enough, is found the most beautiful of all the wild flowers—*Myosotis sylvatica*, the forget-me-not.

"Leaving Laggan we proceeded to Glacier through the most beautiful scenery. Here the trees increased in size, and one would hardly recognize them as the same species that we had seen in the Rockies—Engleman's spruce, Patton's hemlock, the Douglas fir, the white pine, balsams and flat cedar. In fact these were all we had seen in the Rockies, except Lyall's larch. These forests are as difficult to penetrate—off the trail—as a tropical jungle. One of the worst obstacles to progress is the devil's club (*Fatsia horrida*) a plant of the ginseng family—five or six feet tall, with countless sharp spines. Another barrier to progress is furnished by the alders, whose low branches are prostrate and spread in every direction. The bushes grow as compactly as a cultivated hedge and are as impassable. The flowers still in bloom at Glacier were few—several saxifragas, *Tiarella unifoliata*, painted cup, fireweed, crimson and yellow monkey flowers, etc. On the snowsheds were many plants common to the east. Plants new to us were the goatsbeard, *spræa*, salmonberry and a little claytonia. We saw, in fruit, *Actea spicata*, *Streptopus amplexifolius* and *S. brevipes* and *Smilacina racemosa*. We found a most delicious blueberry and an abundance of raspberries."

Much interest was added to the lecture by stereopticon views of mountain scenery and flowers—the latter colored by Mrs. Van Brunt.



FRED KANST

WORKERS IN HORTICULTURE XIV.

A quarter of a century of landscape gardening for one institution is the record which entitles Fred Kanst to recognition in this department. Mr. Kanst was born in Germany in 1847 and came to America with his parents. He worked at gardening at various places until March 20, 1873, when he was selected as head gardener for the South Park system, Chicago, a position which he still occupies. His thorough and eminently practical knowledge of methods of handling trees and plants has been of great value to the western metropolis, where Mr. Kanst's abilities are thoroughly appreciated. During his early years at South Park he established a wide reputation for his original designs of bedding. He made it a practice to change his designs each year and his original Gates Ajar, Globe, Calendar, Sun Dial, and many other figures made of living plants have been copied and reproduced hundreds of times. In recent years Mr. Kanst has resorted more to planting for flower effects, using thousands upon thousands of herbaceous plants and cannas, which, grouped by his artistic hand, have proved as attractive as were the designs of the days gone by. Mr. Kanst was married in 1873 to Miss Elizabeth Youngblood. They have three children, two boys and a girl. The youngest son has adopted his father's profession and has recently been appointed an assistant gardener in the parks over which Mr. Kanst, Senior, exercises supervision.

Fruits and Vegetables.

QUALITY IN STRAWBERRIES.

Mr. John Craig's excellent notes under the above heading lead me to suggest placing the Alpine strawberry among those of delicious flavor for the amateur's garden. To me its flavor seems unsurpassed. The Alpine continues bearing for a long time, being much more of an ever-bearer than some others sent out as such. It is in fruit now, July 17, and has been ever since ordinary kinds came in, and promises still more by displaying quantities of flowers. It does not seem to

require any particular situation. Probably a cool, partially shaded one would suit it best.

JOSEPH MEEHAN.

Philadelphia.

ARSENIC AS A SUBSTITUTE FOR PARIS GREEN.

In many sections Paris green is almost always employed in the destruction of the Colorado beetle and similar insects, but as it now retails at from 20 to 30 cents per pound, it is quite expensive, particularly as it often seems ineffectual, owing to its probable adulteration. As arsenic is the poisonous element in Paris green, of which it constitutes about fifty per cent, many are now testing it as a substitute, with good results. Common white arsenic can be bought at drug stores for about ten cents per pound, and as it is twice as effective as Paris green it will be rather less than one-fourth as expensive.

Although but slowly and sparingly soluble in water, arsenic cannot be used in solution as it is likely to burn the foliage. While there are other ways of preparing it for use, the cheapest and best is to unite it with lime, thus forming arsenite of lime, which, except for the coloring matter, is practically the same as London purple. The lime should be fresh, un-air-slaked, and should be prepared the same as for mortar, or Bordeaux mixture. One pound of arsenic and two pounds of slaked lime should then be placed in two gallons of water and boiled for forty minutes. When ready for use it can be diluted with water, or added to an equal amount of Bordeaux mixture. For use upon potatoes one pound of arsenic, prepared in this manner, will be sufficient for 200 gallons, and for 300 to 400 gallons for most other plants, or twice the amount with which Paris green would be used. The addition of ten to twenty pounds of lime to 200 gallons of the prepared material will aid in holding the arsenic upon, and lessen the danger of injury to the foliage.

When the poison is applied in atomizers the amount should be considerably increased; thus to one pint of water one gill of the stock solution should be used, with as much lime as can be kept in suspension.

Whatever the insect for which it is used the best results cannot be obtained unless the application is made before the pests have become full grown, and so thoroughly that all parts are covered by it.

L. R. TAFT.

Miscellaneous.

AMERICAN SEED GROWING.

SELECTION OF PLANTS FOR SEED BREEDING.

Every living organism has a character distinct in a greater or less degree from that of every other. This individuality is the outcome and expression of the balanced sum of the influences it has inherited from its ancestors, plus that of its environment, but in different individuals the influence of a common ancestor is not necessarily of the same numerical value in the making up of the sum of influence; it is rather as if the influence of each ancestor was represented by a digit and the sum of influence was expressed by these digits written in an order which varied in each case, the individual character depending upon the relative potency of the influences which go to make it up.

Of a lot of pigs or puppies born of the

same parents and in the same litter one may be like the father, one like the mother another like some ancestor several generations back, and still another be a curious blending of the characteristics of the other three; again two of them may be so alike in appearance that they cannot easily be distinguished, but while all the progeny of one may be like itself, those of the other may bear little resemblance to their sire or to each other. This same law, or seeming lack of law, in hereditary influence which is so easily seen in animals exists just as truly in plants, though it is not so easily traced. Of eight peas from the same pod four may produce plants practically identical with the one on which the seed grew, while each of the others produce plants very unlike those from the first four, or each other, and of these all the seed of one may give plants like itself while that from the others produce plants of endless variety of form and color.

This varying degree of power which every living organism has to impress its characteristics on one or all of its descendants is correlated with life itself and is a part of its mystery; we do not understand it, nor the laws which govern it, we may never be able to, but we can and should recognize the fact of its existence and use it to our advantage. Though ability to reproduce itself is a quality which we cannot discern by our senses even if we bring to their aid the most powerful of microscopes or the most delicate chemical tests, it is just as much a characteristic as is color or form and is of the utmost importance in securing uniformity of product.

That prepotency can be fixed so as to become a characteristic of a strain of seed is certain. How it can be done may be best shown by an illustration. In the case of the successful breeding of a certain variety of corn which was referred to in a previous article the seed breeder went into the field with a carefully prepared description of just what in every particular an ideal plant of the variety should be and how much variation from that ideal would be permissible in a breeding plant. He selected the ten plants which came the nearest to his description, and the seed of each was saved and the next spring planted separately, but in contiguous blocks. In the fall each lot was carefully examined plant by plant to ascertain in which one of them the largest proportion of the plants were within the prescribed limit of variation and from that lot the breeding plants for the next year were selected and this selection of breeders from the lot which furnished the most uniformly good product was continued from year to year. Generally, he could make a selection of better plants from all the blocks than could be found in the chosen one, and often a better ten could be found in a block where a smaller proportion of the plants were of the desired type, but the breeding was rigidly held to the line which showed by its uniformity that it had the greatest prepotency and in this way a wonderfully uniform stock was developed.

In the fourth or fifth year of this selection one lot showed a very remarkable ability to resist drought. The plants were fairly true to type and this new quality was so desirable that the seed breeder was tempted to save his breeders from that lot but resisted it and saved them according to rule, but he also saved the ten best plants from the new departure and planted the seed in a lot by itself. The result was that only a very few of the plants showed the drought resisting quality so noticeable the year before and

all of the ten blocks varied more and had a smaller proportion of plants true to type than had any single lot since the first year. Had he yielded to the temptation to improve his type and taken his breeding stock from this lot he would have lost the good of four years selection. Doubtless by selecting the best plants from the lot which furnished the most drought resisting plants and continuing such selections for several years a new and valuable variety might have been established but, as we have said, the most important work of the seed breeder is the development of a stock which will come true to type rather than the production of a new sort, no matter how desirable, of which only a small proportion will come true. A long experience in seed growing convinces me that the formation of a clear and well defined idea of just what a plant of any variety should be, a rigid adherence to just that type in selection, and breeding only from those plants which show a strong tendency to reproduce themselves is the only way to produce seed of the greatest value.

WILL W. TRACY.

INFERIORITY OF TYPE.

Mr. Tracy's articles on seed growing and plant breeding are extremely interesting, pointed and valuable. Personally I know very little about seed growing, and my observations on plant breeding are mostly from the work of other men. But the man who grows plants of any kind and pays close attention to the way in which they develop is bound to draw some rather positive, and, I believe, fairly accurate conclusions as to how they are bred.

Now there are two things for which the seed grower and plant breeder may strive—new forms and purity of old forms. In other words he may originate new varieties, or he may fix them after they are originated. I say he may fix them, for unfortunately he does not often do that. While there is a very laudable and effective activity in this country in the production of new varieties, there seems to be an unfortunate insufficiency of effort in fixing good types, especially the more highly bred and persistently variable forms. It thus occurs that while we have an abundance of new varieties which, when true to type, are very satisfactory and very creditable to the originators, a very large number of them are so variable and unstable that they can not be depended on, especially when they fall into unskillful hands or receive indifferent cultivation. They do not hold to their fancy characters, but break up and revert to several very inferior types.

To be sure there is in this no moral misdemeanor on the part of the seed grower. It is merely a question of business. The seed buyers seem willing to pay a great deal more for new varieties than for well fixed varieties, and as the former require less work in their production, no one can blame the plant breeder for working merely for new types. But seed buyers make a very serious mistake in taking this attitude. Take muskmelons for example. A grower is much better off to grow a well fixed strain of Hackensack or Jenny Lind than to spend his time on some much fancier variety which, however, shows only fifty to sixty per cent of the highly bred type, with forty to fifty per cent of mediocre, un-uniform reversions. The same thing is true of sweet peas, asters, zinnias and all flowering plants where the production of new varieties has come to be a commer-

cial object. The grower will always get more satisfaction out of a good variety which runs uniformly true to type than he will out of fancier but unfixed varieties.

The fact is the seed buying public in America has not yet decided to pay the price for seeds true to type. Even after they shall have progressed so far it will be necessary still to determine what are proper types of standard old and new varieties, and then to fix these types by years of careful selection as described by Mr. Tracy. Here is an example of present conditions: We have been growing this year the variety of Lobb's nasturtium known as Asa Gray. We have it from two leading American seedsmen. One describes it as "pale sulphur yellow, very delicate," the other as "cream white, blotched sulphur maroon." Here are expressed two widely different ideas of what Asa Gray nasturtium ought to be. When the plants blossomed both lots were equally mixed with five or six separate forms, some cream white, others showing a distinct tinge of buttercup yellow, others blotched with a very light scarlet, etc. I have no doubt that the cream white is the proper type for Asa Gray, but not more than one-fourth of our plants show that color, and one of the seed dealers did not even think that to be the type.

What I started out to say more briefly is just this: It seems to me that we could better expend a greater proportion of effort in fixing the varieties which we now have, and give a little less to the production of new ones.

Burlington, Vt. F. A. WAUGH.

FIXING VARIETIES.

The papers on "Seed Growing in America" by Prof. Tracy, of Detroit, have given me much pleasure and profit in the reading. I am unable to speak from personal experience upon the vegetable side of the subject, although I have had some opportunity of looking into the methods employed in the seed pea growing territory of Canada. Here the trade amounted to nearly \$200,000 annually till the McKinley tariff shut off the American market to a large extent. A number of new varieties of peas have originated in this locality and there are a few in process of development, in other words, being "fixed."

It seems to me that one of the weak points in connection with variety making in vegetables is that the variety is placed on the market before the type is fixed, in the hurry of the producer to get to the front. This defect in American seed growing is no doubt also due, as pointed out by Prof. Tracy, to the lack of a clear conception of the ideal type. In some of the newer varieties of beets and cabbages it is not difficult to select half a dozen types from a row thirty feet long. The process of selection has not been carried on long enough and too little regard has been paid to the characteristics of the ideal. As a rule the seed grower depends upon sports or variants for his working stock. In selecting after this method the mental picture—as it very often is—may change slightly from year to year; and there is less chance for wide comparison at the beginning, than there is if crossed seeds are sown. In the case of spring wheat I have watched the behavior of a number of crosses between Ladoga and Red Fife, the former an early Russian variety, and have seen a fixed type intermediate in time of ripening produced in eight years by rigid selection. When a bearded wheat was used as the female and a beardless

variety as the male, the larger proportion of the first progeny were bearded, thus following the older and more stable type. In the second sowings, as might be expected, both types sport freely, and the work of fixation is in consequence comparatively slow.

As Prof. Tracy says, in substance, the more difference in the parents the greater the number of types will be produced in the progeny and the slower will be the work of selection. For this reason proportionately fewer beneficial results have flowed from violent crosses than have attended experiments carried on within narrower confines. It is true that in fruits the California wizard, Burbank, has obtained wonderful results from hybridization; but this is probably due to the marvellously extended range of his operations.

Ithaca, N. Y.

JOHN CRAIG.

PLANT PROPAGATION FOR PARKS.

At the Minneapolis meeting of the American Park and Outdoor Art Association, Fred Kanst, landscape gardener of the South Park system, Chicago, read an excellent paper, as follows:

The subject of plant propagation for parks is one which is often brought before park officials for consideration, there being few parks throughout the country so well supplied with native trees and shrubs that none need be procured.

In the majority of parks, and especially small ones, it is usual to obtain plants by collection from the surrounding country, or by purchase from nurseries. In larger parks, where thousands of plants are required, it is very essential in order to obtain the best results, as well as for economical reasons, that a park nursery be established where such trees as the elm, oak, ash, linden, negundo, birch, maple, etc., may be kept growing in a healthy condition until such time as they may be needed. These trees when young can be purchased from nurseries very reasonably and when in nursery rows they can be had at any time they are wanted, thus saving delay, as the seasons of planting are usually short. Another advantage is that the trees will have become acclimated. But the principal object of a park nursery is to furnish quickly and in large quantities such varieties of trees, shrubs and plants as will be mostly used in the plantations, such as spiraeas, cornus, ligustrums, philadelphus, ribes, symphoricarpus, lonicera, poplars and willows. These and many others may be readily increased from cuttings obtained from plants already about the park, by collection or by purchase.

A place for cuttings should be prepared in the fall by covering a piece of ground with manure or leaves to keep the frost out, sandy places being the best for the purpose. Cuttings of about ten inches in length should be taken in the winter. The old, tough wood does not root easily, therefore cuttings taken from young, ripened wood are preferable. Put the cuttings in the prepared ground, removing the leaves or manure as fast as space is wanted. After the cuttings are in place the covering can be put back to prevent hard freezing, as it is necessary to retain all of the vitality possible.

The planting into the park nursery should begin when the heavy frosts are over, or about April 15, when most of the cuttings will have calloused in their winter quarters. A suitable piece of ground for the nursery can usually be found in some incomplete portion of the park. The ground should be well plowed

and pulverized, and ample provision made for water. Cuttings should be planted in rows running north and south, so that the sun can penetrate between the rows, as they make better plants and grow straighter than if planted east and west.

For park purposes cuttings may be planted from twelve to fourteen inches between rows and from six to eight inches apart in the rows, or about 50,000 to the acre. One man with a good hand cultivator can attend during the summer about 100,000 plants. At one year old cuttings will have grown into fine stock ready for use in the plantations, and at that age the cost is very little compared with what it would be if the plants were allowed to grow another year or two in the nursery. They are easy to handle and only a small hole need be dug to insert the roots. In plantations where the ground is as soft as it should be one man can put out about 500 per day.

The raising of their own plants, as before described, has been practiced by the South Park commissioners for years past, and over 400,000 trees and shrubs, all grown in this way, are now in different parts of the park and all in fine condition. There are also 150,000 cuttings, which were made last winter, growing in the nursery at the present time, which will be ready for next spring's planting.

THE DROPPING OF ROSE BUDS.

ED. GARDENING:—A microphylla rose in our garden at Chestnut Hill, Philadelphia produces only four or five perfect flowers in a season. The plant is very large, its foliage is luxuriant and perfectly healthy, and it is each year covered with buds, but when the blooms are half opened, the petals become separated at the base, so that at the first touch they all drop off. Can you tell me what causes this and whether it can be prevented? D. E.

The dropping of rose buds when but half developed, as described by this correspondent, is not peculiar to the microphylla. Many others are subject to it, especially those that flower a little later than the "June roses" as the microphylla does. The trouble comes from the attack of a fungus, causing premature decay. Just how to combat it is a problem. Lime and sulphur might be dusted on the buds as soon as formed, first spraying them that the dust may adhere, and repeating the operation again when the buds are further advanced. This would be better than Bordeaux mixture, which is objectionable among flowers on account of its poisonous nature.

It is a pleasure to note that this querist has the microphylla rose. It has always been a favorite about Philadelphia, and most all old residences can show one or more plants of it. There is a white and a pink one. The white used to be called the Memorial rose before the advent of the Wichuraiana, its beautiful foliage and white flowers making it a favorite for memorial purposes. It is very hardy. JOSEPH MEEHAN.

THE WEATHER AND THE CROPS.

During the past two weeks it has been warmer than usual in the central and southern plateau regions and from the Great Lakes to Idaho. The excess has been greatest in North Dakota. In New England and the southern and southwestern states it has been 3° to 8° cooler than the usual record. On the morning

of July 12 the temperature fell to within 5° of the freezing point at Northfield, Vt., and from several New England points frosts were reported.

Rain is now generally needed in the states of the Missouri, upper Mississippi, and Ohio valleys, lake regions, and over the greater part of New England, and the middle Atlantic states, especially in Missouri, Ohio, northern New England, and portions of the middle Atlantic states, the drought in Maryland and adjacent portions of Virginia being especially severe. Too much rain has fallen over a large part of the south Atlantic and east Gulf states, causing injury to, and preventing the cultivation of crops. Along the immediate coast from southern New England to North Carolina, in West Virginia, Kentucky, Tennessee, the central and west Gulf states, and generally throughout the Rocky Mountain and north Pacific coast regions, the weather conditions have been generally favorable to crops.

THE DUTCH HORTICULTURISTS.

At the June meeting of the Dutch Horticultural and Botanical Society, held in Amsterdam, the floral committee made the following awards: First-class certificates to E. H. Krelage & Son for *Acalypha Sanderi*; J. H. Kersten & Co. for *Anemone coronaria* fl. pl. *White Lady*; J. H. Schober, for *Epidendrum purpureum*; and J. C. de Lange for *Lilium rubellum*. Certificates of merit to E. H. Krelage & Son for *Brodiaea Howelli lilacina* and H. D. Willink van Collen for *Lupinus Nootkatensis*. Botanical certificates to E. H. Krelage & Son for *Calochortus Maweanus major*, *Iris nigricans*, *Kniphofia Tucki* and *Tulipa Sprengeri*; and to Baron von Boetzelaer for *Masdevallia rosea* and *M. Ehippium*, who also received honorable mention for three varieties of *Odonoglossum crispum*. E. H. Krelage & Son were awarded a gold medal for a collection of cut flowers from bulbous and tuberous plants.

CATALOGUES RECEIVED.

Benjamin Hammond, Fishkill-on-the-Hudson, N. Y., paints; Hubert & Lucas, Vauquiedor Nurseries, St. Andrew's, Guernsey, bulbs; Rea Brothers, Norwood Nurseries, Norwood, Mass., herbaceous perennials; Peter Henderson & Co., New York, N. Y., plants and seeds; The New Jersey Moss and Peat Co., Barnegat, N. J., peat; Ellwanger & Barry, Mt. Hope Nurseries, Rochester, N. Y., plants; John Barth Bos, Overveen, near Haarlem, Holland, bulbs; Arthur De Meyer, Mont St. Amand, near Ghent, Belgium, plants; Brinkworth & Sons, Winchester, Hants., England, seed dressing; Pennell & Sons, Lincoln, England, plants; E. H. Krelage & Son, Haarlem, Holland, bulbs; Pinehurst Nurseries, Pinehurst, N. C., seeds.

BEL WORMS.

There has been some discussion on the use of silico fluoride of ammonium in the *Journal of Horticulture* (English). In an article by Mr. G. Abbey, it is stated that experiments conducted by him show conclusively, that one ounce of this substance to a square yard of ground will completely destroy eel worms and many other noxious insects. As its effects are injurious to some plants (although not so much to the roots as to the leaves), he advises treating the ground before planting. The substance soon decomposes and thereby becomes harmless to vegetation while, as it contains about 19 percent of ammonia, it leaves in its decomposition a valuable fertilizer.

HOW TO GROW GENISTAS.

The genistas are sometimes called cytisus, but the former being the old Latin name and the one with which I have been the longest familiar, I shall use it in this paper. Genista is a large genus; over sixty species have been described. They are natives of Europe, Asia, Africa and the Canary Islands; many of them are hardy, and all are of a shrubby character. *Genista Canariensis*, from the Canary Islands, and *G. racemosus*, supposed to be a variety of greenhouse origin, are the only two varieties usually grown for house decoration. *G. racemosus*, being the best in color and in habit, I grow the most of this variety.

The propagation of genistas may be done either in mid-winter or spring. I prefer the former, although they take much longer to root. But the difference in the size of plants pays for the extra time. For winter propagation take cuttings of good size (with a heel), say four to six inches long, when the plants are in a dormant condition and insert them in a propagating bed, box or pot, as best suits your convenience, with a temperature of about 55° or 60°. Wait two months or so and you will have a lot of well-rooted, stocky plants.

For spring propagation, take the ends of the young growths about two inches long. Put them in a propagating bed with the temperature of about 65° to 70°, and shade from sun. Put them in thumb pots, with care not to break their brittle roots, as many plants are lost from this cause in transferring them from the propagating beds to their first pots. After they get established in small pots, there will be no difficulty in shifting from one size of pot to another.

There are three ways of growing genistas in summer and but one in winter for the best results. The first method for summer treatment is to keep them in greenhouses. That is to say, they live in a greenhouse from the cradle to the grave; they are born there; they thrive there until at last, to give a generous reward for their kind and incessant care, they burst into beauty, soon to die of utter neglect in some palatial home.

The next plan is to plunge them in their pots, in some material which will retain moisture, outside in a frame. The last is to plant them in the field as early as it is safe; lift and pot them on the near approach of frost. Of these three, the first is my method of culture, and I will describe it, as I think it gives the best results, although more expensive than the others. But quality is my aim for the results of my labor. I always find it pays, and believing you want the best methods, I will pass over the latter two.

While growing, the genista loves plenty of moisture, and a good, rich compost, consisting of one-half loam, cow manure and sand in equal parts for the other half, with a little bone meal added. Shift the plants from one size of pot to the next larger as the pots become well filled with roots. If it is your wish to grow shapely plants, they will require trimming five or six times during the summer and autumn. You may trim and train them into any desired shape.

WM. K. HARRIS.

Societies.

MINNESOTA HORTICULTURAL SOCIETY.—The premium list for the exhibits at the state fair to be held at Minneapolis in September has been prepared. It is

designed to attract an adequate display of the state's fruit growing resources, but also offers excellent prizes for exhibits of flowers and vegetables.

DICKINSON COUNTY HORTICULTURAL SOCIETY.—An organization of this name will be perfected at Abilene, Kan., on August 10.

SKAGIT COUNTY HORTICULTURAL SOCIETY.—This society was in session at Mt. Vernon, Wash., the county seat, on July 16. Capt. D. F. Decatur was the moving spirit of the meeting.

OTTAWA HORTICULTURAL SOCIETY, OTTAWA, CANADA.—There was a meritorious display of flowers and fruits at the meeting July 19. Prof. Shutt talked upon special manures for garden crops.

FLOYD COUNTY HORTICULTURAL SOCIETY.—The meeting July 2 was with H. B. Stoy at Georgetown, Scott county. Papers were read by Dr. H. S. Wolfe, Thomas Farnesley, M. V. Hanger and Rev. Harvey Green.

INDIANA HORTICULTURAL SOCIETY.—The annual summer meeting will be held at Connersville, August 11 and 12, and a very interesting program has been prepared. Accompanying the announcement of the meeting a circular was sent out inquiring as to crop conditions. Seventy counties have been heard from and a summary of the reports shows that Indiana's crop of fall fruit will be very poor.

ASA GRAY BOTANICAL SOCIETY, UTICA, N. Y.—The society held a very pleasant session with Miss Elizabeth Sharp, 323 Genesee street, July 12, and made plans for its excursion to Frenchman's Island, in Oneida Lake, made on July 25. A feature of the meeting with Miss Sharpe was the exhibition, by Miss Boyce, of a very fine specimen yucca plant, commonly known as the Spanish dagger.

GULF COAST HORTICULTURAL ASSOCIATION, ALVIN, TEXAS.—W. H. Harrell, manager, gives the following figures for the four months ending July 1: Total express shipments of fruit and vegetables by members, \$13,541.28; express charges and commissions just half the gross, leaving net returns \$6,770.64. Twenty car-loads were shipped, gross receipts from which were \$6,879.39; freight, \$3,023.01; commissions, \$621.76; net to growers \$3,259.04.

NOBLE COUNTY HORTICULTURAL SOCIETY.—The meeting, July 16, was with John W. Moorehouse, four miles east of Albion, Ind. There was an excellent display of fruits, vegetables and flowers, and papers were read and discussed by M. J. Borek, Avilla; E. H. Upson, Wilmet; W. W. Carey, Albion; M. J. Good, Avilla; Wm. Talbert, Albion; E. E. Snyder, Wolcottville; and J. C. Kimmell, Ligonier. Liberal premiums were given in the various classes.

ALTON HORTICULTURAL SOCIETY, ALTON, ILL.—At the July meeting the following were expressions by members: Peaches should be planted on hills; Sneed is the best early variety we have, free stone and hardy. The Lawton and Piasa are our best blackberries and Miller the poorest. For ornamental planting the sugar maple, tulip, chestnut and linden are valuable in the order named. Bubach is our best strawberry; Jersey Queen was for years the best but does not do well now. Worden always produces some small grapes; the greatest neglect in vineyards is in the matter of cutting away old wood.

Now Ready

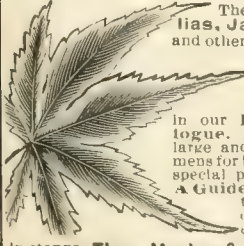
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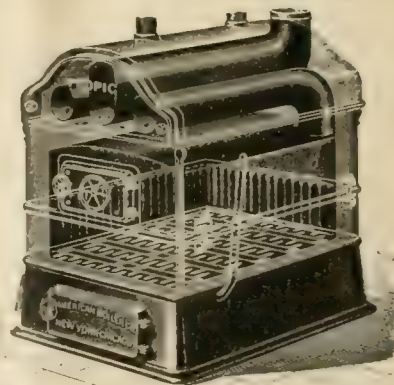
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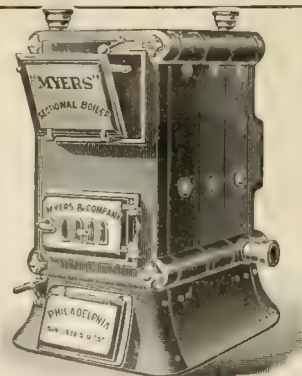
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GARDENING

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24 NUMBERS

CHICAGO, AUGUST 15, 1898.

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No. 143.



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Extremely vigorous grower, foliage glossy and of thick leathery substance. Flowers large, single, three inches in diameter, opening pale yellow, with cluster of bright yellow stamens, very fragrant, and produced in greatest profusion, covering the plant entirely, and having the appearance of a yellow Cher-

okee rose. Great acquisition and the most striking variety of the set.

GARDENIA—WICHURAIANA × PERLES DES JARDINS.

Strong grower with large green foliage, flowers produced singly on stems six inches to one foot long. When in bud hardly distinguishable from Perle, bright yellow, and when open, cream color, and three to three and a half inches in diameter, incurving toward evening to perfect imitation of a gardenia as to shape and color, hence its name. Flowers are delightfully fragrant and produced freely. A grand rose for any purpose.

JOHN N. MAY.

THE CRIMSON RAMBLER ROSE.

The rose Crimson Rambler, as seen here in the nursery of Messrs. Ellwanger & Barry, is a magnificent sight just now. For several weeks it has been in full bloom, and in spite of hot and extremely dry weather is still in first-class condition. The plants were put out a few feet

apart twelve months ago last spring, and they have made a splendid growth. A trellis had to be erected to support the many strong canes which spring from the base of each plant, and this summer the breaks on these canes are so numerous that the whole forms a perfect hedge. As every side growth terminates in a large, well-shaped panicle of beautiful bright bloom, the whole trellis is a grand, solid mass of crimson roses in all stages of development, from the tiniest bud to a full-sized, open flower. In Mr. Ellwanger's private grounds a similar trellis has been in full bloom for the same length of time, but the growth here is even stronger than in the famous old nursery grounds, and this season's canes are surpassing those of last year in thickness and length, promising to give still better results another season. It is wonderful how persistently the petals adhere to the full blown flower; they do not drop until they are nearly dry, and as the clusters are dense and many-flowered, we cannot notice when a dozen flowers have lost their beauty, because others have filled out the space and covered the unsightly old calyx with their spreading petals. This is truly a grand rose for every imaginable purpose, outdoors or under glass. It behaves well in either case, and we can readily dispose of it at any time of the year either as a pot plant or in the cut state. It is especially recommendable for ornamental purposes in the garden, for we have no other plant of its class which could be equally satisfactory in every respect during June and July. We can train it ten feet high, or, if so desired, we may keep it down to four or five feet by pruning or pinching, and in either case we can rely on a most profuse show of bloom.

J. B. K.

SINGLE ROSES AT EGANDALE.

Intelligently used as to situation and grouping, anyone desiring them may have attractive spots in their grounds by the use alone of the native roses of Cook county, Illinois. The first to bloom is the pale pink *Rosa blanda* varying in height in the wild state from one to four feet. This rose will thrive in extremely dry situations, in sandy soil, or on dry loamy clay banks. I have seen it covering the clay banks of the railroad cuts, blooming as freely as one could wish. Certainly nature here gives a hint to some of us who may have unsightly banks to cover.

About the time *R. blanda* is fully in bloom, the swamp rose (*R. Carolina*) opens up, and if in a congenial situation—a rather damp one—it will continue in flower well into August. It has dull green foliage, and showy pink flowers. Following this comes the dwarf *R. humilis* which opens up a few days earlier than the eastern *R. lucida* supposed by some to be identical with it. This (*R. humilis*) is very accommodating, in that it will thrive in dry and quite shady locations. Its flowers vary from quite a dark pink to an almost pure white. The foliage is a dark green, clean and quite glossy, assuming most beautiful autumn tints. In this feature it is most valuable, a bank of it leading up to a group of sumach, backed by a few well colored maples, making a picture not easily forgotten.

I have a batch of some fifteen hundred plants along a wild roadway, planted thickly to take the place of grass, and the effect of its mass of coloring in the fall is charming. There are many estates in the west where this rose could be used with good results, and the plantation would

not require, after the first year, as much care as it would on the lawn. I took my plants from the open woods where they were growing in the grass and to simulate the shading of the roots by the grass, moneywort (*Lysimachia nummularia*) was planted among them.

Early in July *R. setigera*, the Michigan or prairie rose, commences to flower. This is a climber, and as is well known, the parent of the familiar Baltimore Belle, Prairie Queen and others. A group of this form, trained to a post, makes a grand picture about July 15, when it is in its prime with numerous clusters of large rose colored blooms. With me it requires an open situation, as otherwise it miledews during some seasons. While still speaking of our native roses, it is well to mention that there is a white form of *R. lucida* that is an acquisition. This and the type are hardy here, but not native.

Among the exotics the first to open—much earlier than any of the above mentioned—is the charming *R. spinosissima* *Altaica*, sometimes catalogued as *R. grandiflora*. It blooms in May, large

single paper-white flowers, nearly covering the bush with its mass of bloom. It grows about three feet high, forming a very symmetrical bush and is hardy here in ordinary winters without protection. *R. rugosa* follows in quick succession. It is too well known to require description, but I desire to call attention to one feature. In the pink form, there are several shades, ranging from the weak, washy color to a rich pink identical with that of the rugosa hybrid, Belle Poitevine, of M. Bruant. The stock of this rose is so plentiful now that nurserymen can afford to weed out the poor colors.

The handsome *R. rubrifolia* closely follows the rugosa. This is essentially a shrubby rose, most effective in that position, or standing alone at the edge of the lawn. It is extremely handsome in its foliage effect, especially the new growth. The specific term *rubrifolia* is misleading, it having more of a glaucous hue than red. The flowers are numerous, rather small, dark red, with a pinkish center. For a short time after blooming the brown stamens give the bush a rusty



SPRAY OF NEW ROSE JERSEY BEAUTY.

look, but it soon recovers its beauty and fruits finely.

Next comes *R. alba*, of doubtful origin but of unusual beauty. The bush is covered with single pure white flowers, each two and one-half inches in diameter and borne in clusters, the stamens forming a dense mass an inch broad, yellow at first, but turning brown later on. It requires protection with me. Paul's Carmine Pillar rose when in full flower is worth a long journey to see. It is not over hardy and in protecting it for its winter's rest I prefer to lay it down, covering the branches with evergreen boughs and a water proof box. Its single carmine flowers are three inches in diameter and freely produced. Paul's Single White, a bush form, rather dwarf, has paper-white flowers produced quite freely, and very closely resembles the white form of *R. lucida*. I protect it slightly. Cooling's Single Bedder promises well. I know nothing of its parentage or hardiness. Its flowers are much like those of Paul's Carmine Pillar, being of the same size, but the plant is very dwarf.

Classed among the single roses may be placed the hybrid sweetbriars, the grandest acquisitions our gardens have been favored with for years. Of the seven varieties grown here I am the most impressed with Meg Merrilees in its rampant growth and large rich crimson flowers. All of these hybrids possess the leaf fragrance of the sweetbriar to some degree and are fairly hardy. *R. Wichuraiana* the Japanese trailing rose whose habit, when established, of sending out prostrate shoots ten to twenty feet long, enables it to be trained to posts, arches, or arbors with effect. The clusters of large pure white flowers in July followed by bright persistent fruits, both well set off by the dark green, glossy leafage, evergreen under some conditions, are very decorative. Manda's hybrids of this are well worth growing. It is hard to decide which is the best. Those who like any color so long as it is red, will prefer the Pink Roamer, which is perhaps the best for trellis work as it is the strongest grower. It is supposed to have sweetbriar blood in it as the flowers somewhat resemble that species, but they are of a much brighter pink than the general run of briars we see.

Universal Favorite is less vigorous, bears light pink double flowers, two inches in diameter, somewhat fragrant. Manda's Triumph is a still more moderate grower but extremely floriferous. The flowers are white, very double, imbricated, and sweet scented. They are a little less than two inches in diameter and very much like an enlarged bloom of the polyantha rose White Pet. All of these hybrids possess beautiful glossy foliage a little larger than that of *R. Wichuraiana*. I have not grown South Orange Perfection. Mr. Jackson Dawson has hybrids of *R. Wichuraiana* not yet introduced to the general public that possess unusual merit. W. C. EGAN.

ROSES AT THE ARNOLD ARBORETUM.

Hybrid roses are not reliably hardy in the United States. True, there are some localities where they succeed tolerably well, but in most places their culture is continued under discouraging conditions. A large number of plants never get strong enough to bloom well and those that do are short lived. The question of establishing or creating a new breed better suited to our climate has engaged the attention of specialists for a long time.



SPRAY OF NEW ROSE EVERGREEN GEM

Among others Mr. Jackson Dawson, of the Arnold Arboretum, Boston, has given much time and thought to the subject. At first he believed it was a question of stock for grafting, and he has experimented largely with native and other reliably hardy species. *R. multiflora* has been tried with most satisfactory results, so far as concerns vigor. At first stem grafting was practiced, but this has proved unsatisfactory on account of suckers; roots alone are now used. Some eyes of Paul's Carmine Pillar on roots have grown four feet this season. Florists complain that tea roses are too rank on the multiflora stock and that the flowers are soft. So much for stocks.

The idea that hybrid roses could be made hardy by grafting on a hardy stock has been abandoned. Mr. Dawson now considers a new type necessary. This he is working for, and showing what cross breeding and selection will do, we need only look at Mr. Manda's hybrids and Mr. Dawson's with *R. Wichuraiana*. In choosing *R. Wichuraiana* and General Jacqueminot, two very distinct roses are brought together. Only an innate love for experiment could suggest such a proceeding. Some curious breaks, and some valuable ones, have come from these crosses. The indications are plain that by following them up, infusing hybrid blood, and reverting occasionally for



ILLINOIS EXHIBIT AT THE TRANS-MISSISSIPPI EXPOSITION.

vigor, we shall have hybrids hardy enough to remain uninjured by any ordinary frost. There is a host to work with. Probably Crimson Rambler, in which we have remarkable color and constitution, will help us to a new type of trellis rose.

Some of Mr. Dawson's hybrids are already well known, and a few sent to England have been enthusiastically commented upon. The Dawson Wichuraiana and Jacqueminot, a climbing cluster rose with semi-double pink flowers, is a better trellis rose than the Crimson Rambler, though not equal to it in color. Wichuraiana and rugosa is a delicate single rose with trailing habit—a splendid cover plant. Rugosa and Jacqueminot makes a fine bush with deep crimson flowers. Wichuraiana and Jacqueminot has produced two good double varieties almost equal to a hybrid in build of flower; one is a delicate peach, the other deep pink; both are of vigorous constitution. Numerous crosses were made this season, and some interesting information was gathered as to the manner of making them. If the flowers were left on the plants, the bees would get all the pollen before the operator, so they were brought under glass and ripened. A brush is considered wasteful, so the point of a knife is employed in collecting and applying the pollen. Boston Belle, an old rose of good constitution, was extensively used this season among these hybrids. Seedlings of Wichuraiana crossed by China roses will be watched with interest; they are making pretty plants, all more or less creeping after the habit of the seed parent, but showing much variety in foliage, some being dark like the pollen parent.

Beautiful landscape effects can be made with the species of roses. From *R. cinnamomea*, *R. spinosissima*, and *R. blanda*, to *R. lucida* and *R. setigera*, the prairie rose, gives us a long season of bloom. A month ago *R. spinosissima* was superb. To-day *R. setigera* is at its best, the flowers changing from deep rose to white as they mature, make a splendid effect. The rare *R. lucida alba* is being propagated by thousands; it is a most deserving acquisition. I should not forget to mention some hybrids with *R. multiflora* and the Dawson. Some large bushes of these have been blooming in the nursery for a month past. From a decorative point of view they are far superior to the common *R. multiflora*. Immense trusses of semi-double white flowers, occasionally tinted, terminate the stems, forming bouquets in themselves. T. D. H.

OMAHA'S GREAT EXPOSITION.

If one wishes to breathe the air of the Riviera with no fear of the Spaniard, he need only sit beneath the snow-decked branches of the fragrant oleanders which surround the east end of the lagoon at the wonderful Trans-Mississippi Exposition. There is a charm cast over the scene as the evening clouds close over the dying sun and you are ushered into an unknown land. One seems to have fallen asleep and is only awakened by a voice coming across the flashing waters of the gem-lit basin below. Hark! What is the voice? Ah, we are surely not in Nebraska! This deep blue, studded here and there by the tardy stars of night, as if ashamed to show themselves to their brighter clustered rivals, which, sentinel-like, illuminate the water's edge; no, not Nebraska; but yes, "Land of the flowing waters," for this is what the Indian name implies.

Filled with legends is this land. Within its precincts were the famous seven cities of Cibola in the land of Quivera, the mystic city of the westlands. These have all long since vanished and are only

brought to mind by the annual pageants of the Royal Knights of Ak-Sor-Ben illustrating the mysterious rites of the more mystic people who are said to have inhabited this broad land of blowing winds and ripening grain. But here has arisen another magic city, the Columbian Exposition's only rival, or is this the Phoenix arisen from the ashes of the White City on the lake? These fluted columns and stately colonnades and splashing fountains that send forth liquid jewels of rarest hue only to sink into the limpid azure of the rippling mirror to again appear in dreamy blue that suggests the mist of mountain top; changing then to golden rain, now to ruby gold. Are they the memories of the past here taken shape and substance before our eyes? The rich voice of the Venetian gondolier half startles one who sits entranced as in a dream. Venice, fair Bride of the Adriatic, could you but arouse your sleeping doges, you would not rest until you had brought back the column of Neptune in front of the government building at the far end of this western Court of Honor.

When some jostling sight seer recalls us from our day dream let us ramble among the exhibits of Nature's handicraft in the Italian gardens or the vine-decked loggia, for here

"The roses fold their silken leaves,
The foxglove shuts its bell,
The honeysuckle and the birk
Spread fragrance through the dell.
Let others crowd the giddy court
Of mirth and revelry
The simple joys that Nature yields
Are dearer far to me."

Ascend the broad staircase leading to the Casino and find your way around to where the colonnades begin the second curve. Look at the scene before you; an endless chain of incandescent lights creeping around the cornices of each building and the searchlights from the giant See-Saw on Midway flashing from statue to statue along the court. What a beautiful vista presents itself from these Italian arbors! For contrast turn to the simple doric columns supporting the heavy framework festooned and garlanded by the tangled vines of the cobeia, clematis and madeira. Let us go to the end of the arbor and descend the hidden stairway, then follow the semi-circular path over-



LOS ANGELES EXHIBIT AT THE TRANS-MISSISSIPPI EXPOSITION.



VIEW IN HANSCOM PARK, OMAHA, NEB.

grown by cannas and bronzy ricinus. The air is sweet as pansies and violets can only make it. The impish faces have turned into bells of silver upon the moon-flower's climbing vines, and the place is one of wondrous beauty.

NOTES ON EXHIBITS.

Horticultural Hall is one of the largest and grandest buildings upon the exposition grounds. The ornamentation, in a frieze extending along the front and sides of the building, is especially attractive and, in connection with the statuary and grand entrance, has an unusually pleasing effect, aside from the plant and fruit decorations, which harmonize so well with the general plan of the building. The vaulted dome, supported by its many-fluted Corinthian columns, holds a peculiar charm for the Trans-Mississippi visitor. Herr Hesser, of Plattsmouth, has arranged a fine display from his famous palm gardens. His *Cycas circinalis* is the grandest plant in the building, and there are many fine specimens on exhibition.

Hadkinson's seedling canna, The Shell, is attracting more than ordinary attention from visiting floriculturists; bright green foliage, erect habit, vigorous growth, spreading heads of light straw-colored florets, resisting the fierce rays of the noon-day sun, which they seem to actually enjoy, it is just the thing for hot climates.

A. T. Erwin, a former graduate of Shaw Gardens, St. Louis, has taken notes and a number of snap shots of the various exhibits this week. He pronounces The Shell a triumph in mass planted effect. Upon his return he will be connected with the Arkansas University and Experiment Station, Fayetteville, Ark.

Cactus King Davey is also the proud possessor of three new seedling cannas, one a rich velvety deep cardinal, a free

bloomer, and the largest blossomed plant on the grounds. It has been christened the Austin. The second is a leopard somewhat like Florence Vaughan, only brighter and of deeper orange ground, while the third is a gold edged bright red. He shows a fine collection of cacti in a bed south of the Nebraska building.

W. Atlee Burpee & Co., Philadelphia's energetic seedsmen, have just come into the hall and show a grand assortment of their choicest sweet peas grown especially for the Exposition at Waterloo, Neb., by J. C. Robinson. They have fifty-two varieties on view. B. F. Bell is in charge and renews the bouquets every other day.

Should you become entangled in the winding labyrinths of the fernery beware of the alligator, the ward of the Iowa exhibit. The monster had a lively frolic the other day and chased "Dad" Erbling all over Dreer's lily basin. He only saved himself by jumping upon one of the enormous leaves of the *Victoria regia* and was rescued by the horticultural force after a hard fight. The alligator is now caged and winks the other eye, while "Dad" passes by afar off.

W. R. Roach, representing Jerome B. Rice & Co., wholesale seeds, of Cambridge, N. Y., is visiting the exposition.

Landscape Architect Ulrich spent a few days upon the grounds while enroute to New York from the Yellowstone Park.

J. H. II.

A NEW REMEDY FOR APHIDES.

Kraft's Plant Tonic has been tested on fruit trees and chrysanthemums infested with aphides at the Cornell University Experiment Station, and proved effective. The black aphid is such a troublesome pest to chrysanthemum growers that they will be glad to learn of anything likely to banish it from their premises.

The Flower Garden.

SWEET PEA NOVELTIES OF 1898.

We are now able to report on sweet pea novelties in this section. But the hot wave, which reached 100° in the shade last Sunday, has forced our vines into bloom beyond their strength, so that on light soil all the varieties have fallen below their normal size, both of stem and blossom. But we have everything as true to color as this climate allows. We represent a latitude from which a very large sweet pea patronage comes, and my report must be somewhat severely just for this reason. And from frequent conferences with our most skillful growers I must say that with each succeeding year our patience and perseverance are being more and more sorely tried. By whatever method I plant I wish before I get half through the month of July I had tried some other. Still God's world is the same old world, and the fault must be ours, if we do not succeed.

Everything is in bloom now. As I look over the last Eckford list of novelties—his 1898 set—I see that three of them received first-class certificates, and two others awards of merit, at various English shows. Having seen Mr. Eckford's place in full bloom, and retaining still in mind a delightful picture of his vases of novelties at two of the English shows, I can well understand how he has received the above certificates and awards of merit, and that they were justly given. But it is a simple fact that all we can do the first year with these expensive packets is to get an idea of their color. And never have we had clearer proof than

this year that the English climate and ours have very different effects on color.

Here in this set are the Prince of Wales and Colonist. At four feet distance we cannot tell them apart. Both are a bright rose after the order of Her Majesty. The Eckford description of Colonist is "a soft lilac overlaid with bright rose," which I have no doubt the English climate made very beautiful. But grown on even an ideal soil, such as some of our growers have, Colonist and Prince of Wales would puzzle me to distinguish them. Our climate, I suppose, emphasizes the bright rose. It is evident that we can attach but little value to any but the decided self colors. Then there are two "orange" varieties in this set. Chancellor is the most decided orange, and is the best one of the set. Lady Mary Currie seems but a repetition of Penzance. The supposed shade of rosy lilac in the Currie disappears in our climate. Duchess of Sutherland, a pearl white, has the misfortune of being so near like two of the Burpee set that it can hold no place. Duke of Sutherland, which is doubtless made out of Monarch, can be duplicated by well grown stock of the latter. Black Knight, of which I well remember seeing a magnificent row at Wem, while perhaps being a little deeper in color than Stanley, will practically be only a rejuvenation of the latter, and it will be as easy to hold one up in size as it will the other.

And I ought here to revert to last year's set of Eckford's. It is a disappointment throughout. We have California grown stock of them, so that they ought to show up well. They practically give us nothing new. Queen Victoria, although it has a black seed, gives us only a weak primrose tint. Lady Nina Balfour, instead of having a more delicate color than the true Radnor, comes very badly. The American strain of Radnor, called New Countess, is very fine in color, and must hold the place as a delicate lavender. Countess of Powis is crowded out by Burpee's Oriental. Salopian does have a richer shading of blood-red than Mars, but does not give us that novel shading towards dark cherry which I saw at Wem. Neither do we get from Shazada as dark an effect as we expected. And Triumph is nothing. Prince Edward of York is perhaps brighter than the old Princess Victoria, but hardly better.

All this is an injustice to Mr. Eckford. He is not to blame for our climate. If our American climate registered no temperature higher than 85 and we had a moist ocean air instead of our inland dryness we could duplicate the delicate shadings seen at Wem, and our blossoms would answer to the Eckford description.

Turning to the American novelties our enthusiasm is kept alive, certainly not by all that are being offered on this side of the water, but by the best of them. Probably in some localities the best Burpee novelty this year is Stella Morse, a beautiful light buff cream. But in this section the best one is Lottie Hutchins. It at once attracts admiration. I am happily disappointed in it. Its yellowish, cream ground sets off the soft rose stripes and flakes very prettily. Oriental is a splendid orange salmon and has only Chancellor to compete with. Modesty bouquets beautifully, and there is no question about its deserving a place. As to Sensation, it is unfortunate just now to have so many sorts just bordering on white crowded upon us. Duchess of Sutherland, Sensation and Countess of Aberdeen are not needed, if we retain Modesty. Dolly Varden and Wawona

add no value to the set. The former probably owes its peculiarity of color to the run out condition of the old Butterfly stock, and the mauve stripe of Wawona we have had more or less of in our various Radnor stock. Pink Cupid is a decided improvement on the white, but it refused to germinate well with me in a border, doing well enough in pots. The Burpee Earliest-of-All strain of Blanche Ferry vindicates its name.

I speak with some diffidence of the Walker novelties, being somewhat prejudiced against the introduction of striped sorts, and preferring that the recognition of Mr. Walker as a novelty maker should depend on a wider endorsement than my personal interest in him. This he is having, and I think his conscientious work deserves it. He has favorable Oregon conditions and for seven years has been in close correspondence with me. He is working his way patiently, lacking the Eckford prestige, and his name as yet carrying no such warrant as the great seed house that is giving us Morse's finest selections from an immense acreage, and that is able to introduce a set of novelties on the largest scale. If a man gets out a catalogue, and there is any merit in his work, so that his introductions appear in our shows, we must recognize him. Bertie Hamilton has a more fixed type than I had thought, the fine wavy markings being of ox-blood red. Mrs. S. T. Walker gives us one-half about like Countess of Aberdeen, and the other half a pretty, faint rosy tinge which I take to be the type of the variety. Minnehaha is simply a good flower of very fine pink veining, and Light Gaiety is of the same order. Of course Mikado breaks up into almost everything of this sort, and altogether these red and rose veined sorts make our rows look as if we have too much of it. The valuable novelties are not along this striped line. If we have good stock of Gray Friar we do not want Dawn.

Among the trial sorts sent I find some excellent things. The new blue which the Sunset Co. mark "A" is the best blue yet introduced, and is quite original. The new orange of Burpee's called Gorgeous is grand. Pink Friar is also very pretty. I see no advance made in yellow except as the buff cream of the Stella Morse gives us a richer effect. The buff cream ground shading into soft rose is one of the new trials. One or two odd things, selected apparently from Laxton's Etna are noticeable. It is useless for us to follow the idea of giving minute details of shading or form, for all that can be relied upon is pronounced color and good vigor of habit. The battle now-a-days to get them into bloom and hold them up till show time is too much of an anxious suspense for us to care much for the art shadings, or the subtle overlaying of one color on another. The first hot wave that catches us after we get the vines into bloom, makes us wonder where our exhibition flowers are coming from. I am waiting to hear how the others fare since our recent spell of 100° in the shade.

Massachusetts. W. T. HUTCHINS.

HARDY HERBACEOUS PLANTS.

Looking over our herbaceous border we notice the following plants in flower during the week ending July 23. Achillea The Pearl which we have been cutting for the past three weeks. All growers should have a good patch of this most useful plant. It is entirely hardy, exceptionally free flowering, and the flat open heads of pure white double flowers last a long time when cut, and associate well with

other flowers. Although a free spreader it can be kept in bounds by running a spade around the clumps, or space allotted to it. *Anthemis tinctoria* is a little gone by but is still making a good show. This should be cut back as soon as the flowers are over; another crop of flowers in September will be the result. If allowed to seed it will soon become a bad weed. *Aster acris*, a native of Southern Europe is just commencing to bloom; the individual flower heads are rather ragged looking; white suffused with lilac. *Astilbe Chinensis* is past its best, but the foliage will be handsome till frost. For a damp place this is very fine, and although the flowers are not very bright (pale pink), the long graceful spikes are distinctive and attractive, especially on large, established plants. *Campanula Carpathica*, blue and white, are very pretty now, and the large blue and white bells of *Campanula (Platyodon) grandiflora* varieties are showing up finely.

Cephalaria alpina, sometimes catalogued as *Scabiosa alata*, has been very beautiful for the last three weeks, and seems likely to last in beauty for some time. The clear sulphur flowers are very distinct. *C. Tartarica* seems to be identical with *C. alpina*. *Cimicifuga racemosa*, closely allied to the actæas has very handsome foliage and racemes of feathery white flowers. When well established, the plant when in flower is three to four feet high and the foliage spreads to about the same width. Like the astilbes this requires a moist place. *Coreopsis grandiflora* is another plant that should be cut back before seeding, so as to secure another crop of flowers later in the season. We consider this the best of the family for cutting.

Delphinium Chinensis varieties have been flowering for the last three weeks, and will continue to do so till frost, if not allowed to seed. There are white, light blue, dark blue and some intermediate shades. *Eryngium amethystinum* is still very fine, and with several plants there is generally a succession of flower spikes from July 1 till frost. The stems as well as the flower heads are of a beautiful metallic blue. *Euphorbia corollata* is a very distinct looking plant; it will continue to flower until frost. The white flowers are arranged in whorls and work in well with others. *Echinops ruthenica Ritro*, the globe thistle, has very distinctive round heads of metallic blue flowers, which last a long time when cut if kept dry. *Gypsophila paniculata* is very fine now; a large plant several feet in diameter makes a pretty background for some of the dwarfier plants. *G. acutifolia*, just commencing to flower, is good for cutting, but hardly showy enough for the border. The flowers are larger than those of *G. paniculata* but more scattered.

Helenium Boulanderii is beginning to make a good show; it is not so stiff in habit as *H. autumnale*, and the flower heads have very distinct dark brown disks. *Heliopsis lavis* is in flower and will continue to make a good show for several weeks with its golden yellow flower heads; it should not be allowed to seed, or it will become a bad weed. *H. Pitcherii* with us is not distinct enough to make it worth while to have both on the border. *Hemerocallis disticha fl. pl* we consider the best of the double *hemerocallis*; the flowers are terra cotta, shading to fawn, and are several shades brighter than the other double varieties. *H. Thunbergii* is very fine; its pale lemon yellow, sweet scented flowers make a distinct feature in the border. *Lychnis vestertina fl. pl.* is still making a good show-

ing with its pure white night-scented flowers. If cut back soon now, there will be another crop of flowers when cool weather sets in again. *Lythrum roseum superbum* has been in flower for some weeks; its long spikes of bright rosy red flowers are distinct and produced continuously during the summer and fall. *Monarda didyma*, the best of its family, is at its best now, and will continue to brighten up the border with its deep red flowers for several weeks. It is good for cutting. *Oenothera Youngii* the best of the taller *œnotheras*, will continue to open its bright yellow flowers for some weeks yet unless the soil becomes too dry. *O. riparia* is quite as continuous, and is fine for the front row of the border. *Pentstemon barbatus Torreyi* keeps in flower longer than most of the pentstemons, and its long spikes of scarlet, tubular flowers are unique.

Phlox suffruticosa varieties are still very beautiful; they are not so set looking as the *P. decussata* sorts, start flowering two or three weeks earlier, and if the flower spikes are cut off will bloom again later in the season. The range of color is from almost pure white to dark pink. *P. decussata* has started to flower and will continue to make the border look bright till fall. We have over 150 varieties on trial this season, including some of Lemoine's latest novelties, and will describe the newest and most distinct as they come into flower. *Sedum spectabilis* fol. var. has very handsome golden variegated foliage, which keeps its color well from spring to hard frost. *Thymus montanus albus* and *T. montanus coccineus* should be more generally grown; they make a very dense carpet of green, and for several weeks are covered with their small flowers. *T. languinosus* forms carpets of hoary foliage, and is worth growing on that account; the flowers are not so showy as those of the two just mentioned, being of a dull lilac color. *T. vulgaris argenteus* and *T. vulgaris aureus* have very pretty variegated foliage, and are good for sunny, dry situations. We find *T. vulgaris argenteus* the hardiest and the variegation is well fixed. *T. vulgaris aureus* is liable to go back to the green form if in a shady position or rich soil.

Viola cornuta and its white variety have a second crop of flowers, and are helping to make the border bright. *Verbascum nigrum* we find the most satisfactory of its family; it started to flower two weeks ago, and by cutting off the flower spikes when over, a succession will be obtained for the rest of the season. It is a true perennial, which is more than we can say for the rest of the *verbascums*.

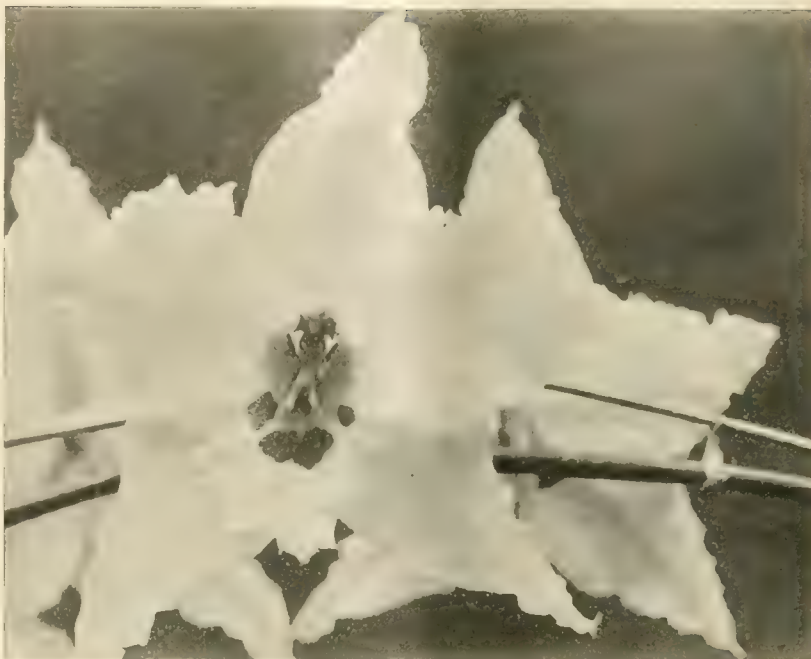
Massachusetts.

R. N.

The Greenhouse.

ODONTOGLOSSUM PRINCE OF WALES.

This superb variety of *Odontoglossum crispum*, exhibited at the Royal Horticultural Society's meeting of June 14, by Hugh Low & Co., of London, was awarded a silver medal and the coveted first-class certificate. This species of *odontoglossum*, in its numberless exquisite forms, has given us many pleasant surprises, but certainly none more wonderful than the present variety. The individual flower measures nearly five inches across, and the labellum is totally abnormal in its size of 1 3/4 x 1 1/4 inches. The substance of the blooms, like their size, is quite exceptional. The specimen exhibited had twelve pseudo bulbs and four



ODONTOGLOSSUM PRINCE OF WALES.

leads. It was imported from Colombia by the Messrs. Low about four years ago, but while thriving satisfactorily at all times, it had never bloomed until this occasion, when it produced one spike with twelve flowers. The plant has passed into the orchid collection of Baron Schröder, at Egham, Surrey, which is world-renowned, especially for its representatives of the genus *odontoglossum*.

CHRYSANTHEMUM NOTES.

Plants benched early in June should, by this time, be in condition for a mulch of well-rotted manure. If they have made a vigorous growth and the soil is well filled with roots showing on the surface, it is time a mulch was applied. Later planted stock will get along for a week or two without being mulched, or until such time as the beds are in the condition described above. Before mulching go over the beds and cut out any suckers that are pushing up through the soil. It is well to take a little care in doing this and not tug and pull them up with a good sized piece of root from the plant, as is often the case when the work is done carelessly. It is far better to take a knife and cut the suckers away. Then try and have the soil in as even a condition as possible, using caution not to have it dry or the plants will absorb the manure too rapidly. The idea of a mulch at this time is to act as a protection for the young roots from the hot sun and drying winds, and also as a gradual nourishment. The manure should be well rotted and made as fine as possible, spreading it as even as can be and not too thick—just enough to cover the surface.

A watchful eye is a necessity now to keep the lateral shoots removed before they get too large and have sapped a great deal of the vitality from the main stem. It is therefore best to pinch them out as soon as they are large enough to handle without injuring the leading shoot that is to be retained. The early varieties must be given every encouragement possible from now on, as the production

of fine blooms early in October depends greatly on the treatment given the plants during the next few weeks. They must not be allowed to dry out or they will soon get stunted, and this means dry and hard wood with small foliage and short petaled blooms.

The plants need to be well syringed on hot days to keep the foliage in good condition and the sap flowing, so that in about four weeks from now they will be in condition to form the kind of bud that is essential for an early and well formed bloom. If any specimen plants are grown for exhibition or market purposes, care must be taken not to allow them to become drawn and leggy. They should be kept away from dark corners and given lots of ventilation. If any are grown outside and they show a tendency to get hard, it is best to put them indoors. For specimen plants that are well rooted a weak application of liquid manure every six or seven days will be beneficial.

C. W. JOHNSON.

FERTILIZATION OF CUCUMBERS.

I was very much amused by a recent article in a contemporary, in which the writer questions the fact that cucumber flowers do not have to be fertilized, or rather pollinated, before they will swell. The erudite personage in question must have been partaking of mixed drinks at the soda fountain on a hot day and got his knowledge of cucumbers mixed with that of melons, though even in the case of melons I believe it is the proper thing to wait till noon and get the house dry enough to let the pollen fly. Some of his efforts at pollination, however, had not been in vain, as can plainly be seen by the number of fruits with a bulb on the end—shown in an illustration accompanying the article to which reference is made. This is a fatal defect in a cucumber of salable size. I would advise the budding trucker, and the admonition is given in all Christian charity, not to get too deeply into the business, and to stay in bed as long as the average gardener. He will then have better looking cucumbers.

G. J.

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

SEND US PHOTOGRAPHS OR SKETCHES of your flowers, gardens, greenhouses, fruits, vegetables, or horticultural appliances that we may have them engraved for GARDENING.

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AUSTRALIAN raspberry pulp is sold in London at \$182 per ton.

SAN JOSE SCALE is as yet unknown in Nova Scotia and strong efforts are being made to prevent its importation.

A. G. JACOBS, of Springfield, Mass., has a Crimson Rambler rose upon which there have been at one time 5000 buds or blossoms.

THE attendance at the Trans-Mississippi Exposition is already large and is increasing each week. The show is well worth seeing.

REPORT says that of currants Pres. Wilder, and of pears, Kieffer, are the only varieties to yield well in western New York this year.

THE big apple crop of 1896 was largely sold abroad and this year there is a very noticeable increase in the European demand for the fruit.

AUSTRIA has issued a proclamation prohibiting the importation of American nursery stock. This action is taken in fear of San Jose scale.

CALIFORNIA is the greatest horticultural state in the Union, New York is second and Illinois third. Illinois has \$4,777,083 invested in nurseries

L. ELIA-CATTLEA ADMIRAL DEWEY was exhibited recently in London. There is evidently one Englishman who knows a good thing when he hears about it.

It is said that the odor of flowers is antiseptic and that during epidemics those who are employed where they constantly breathe the perfume are exempt.

THE Kezalink Valley in Roumania is entirely given up to the cultivation of roses, the essence of which is sold to perfumers in Paris at a very remunerative price.

THE Buffalo park commissioners have mailed 28,000 circular letters to householders asking co-operation in the extermination of the caterpillars which are destroying shade trees.

ACCORDING to the *Gardeners' Chronicle* one English grower sent to market 1,820,000 blooms of the double white narcissus in three weeks. One day's shipment was 248,256, weighing nearly three tons.

THE use of dendrolene on the trunks of apple trees, according to Prof. Goff, of the Wisconsin Experiment Station, resulted in killing fifty-seven trees out of 180 treated and severely injuring a large part of the remainder.

JOSEPH J. DAYNES, Jr., of Salt Lake City, has a specimen of *Lilium auratum* with five blooms in a cluster, each flower eight inches in diameter. Mr. Daynes states that the plant is very difficult to grow outdoors in Utah.

JET BLACK ROSES, so long considered impossible of production, have, it is announced, made their appearance in Russia. Mr. Fetisoff, an amateur of Veronezh, is said to be the originator of the plant which bears them.

THE Society of American Florists has adopted as its badge for the August convention a silver rose leaf embossed "S. A. F. 1898," which should be provocative of warm greetings at the home of the good friends of the white metal.

TEN and a quarter millions of dollars have been spent on experiment stations and the free distribution of seeds in the United States, not to mention the large appropriations made by the various states for similar purposes. The receipts, evidently, go to generations yet unborn.

THE city of Ghent, Belgium, long famous in the world of horticulture, is soon to have a new botanic garden. It is surprising how many small foreign cities maintain such institutions, while many of the most important centers of population in America are still content to plod along without them.

RUSSIA will hold an international horticultural exposition at St. Petersburg in 1899. It will be under the patronage of the Czar and every effort will be made to make it a notable one. The display of flowers and plants will open May 17, 1899, and continue ten days. In the fall an exhibition of fruits will be given.

MR. A. L. WINTON, says the *Gardeners' Chronicle*, gives the following details relating to violets: One thousand plants contained in pounds, 257 pounds of water, 52 of organic and volatile matters, 7 of other mineral matter, equal 316. Of nitrogen, the quantity works out at 1.5; potash, 1.74; soda, .55; lime, .62; magnesia, .25; phosphoric acid, .37; sulphuric acid, .32; chlorine, .27; other matters, 2.76, equal 6.88.

THE price of nursery stock in Canada has not advanced because of the recent enactment excluding stock from the United States. Nurserymen in the States who had booked orders in the Dominion, which they were not permitted to fill because of the act, bought stock at wholesale from Canadian dealers and packed their orders inside the boundary. The considerable surplus of Canadian grown shrubs and trees enabled them to do this without loss.

TREE PLANTING ON PUBLIC STREETS.

The following is the paper read by C. M. Loring, president of the American Park and outdoor Art Association at its recent convention at Minneapolis:

Any city or village, however inexpensive its buildings, can be made attractive by planting trees and otherwise embellishing the public streets with borders of grass and shrubs and flowers, thereby giving them a park-like appearance which is very pleasing to the eye, and refining in its influence.

The pioneers of our New England cities and villages appreciated the value and beauty of shade trees, and as a result, we have such attractive cities as Bangor and Portland in Maine, New Haven and Hartford in Connecticut, Springfield and Salem in Massachusetts, where grand old elms spread their sheltering arms over modest homes. Why are these old cities called beautiful? What makes them so attractive to the tourist and the seeker of rest? It is not the architecture of their residences, as the majority of them are very plain. Their great attraction is the trees which border their streets. There are cities dear to the recollection of all sons of New England, where certain thoroughfares have a wide reputation for their attractiveness, on which there are no large estates, and very few fine houses; but the noble elms which form arches over the streets, and screen the imperfections of the houses, which seem half hidden in a border of waving foliage, form a picture which is photographed upon the minds of all who see it, and they exclaim: "What a beautiful city!" I was born and reared under these grand old elms, and much of the happiness of my life has been derived through my love and reverence for them.

A pleasant argument of the lurking instinct for arboreal life might be found in the fact that we like to give the name of roof-tree to our domicile, although the roof-tree may be brick or stone.

Thousands upon thousands of the sons and daughters of New England left their homes with the love of the old roof-tree in their hearts, and this love carried its influence wherever they made new homes, and the memories of the old, with the longing for the trees, resulted in the planting of streets and roadways which are the pride of many cities in our middle and western states. One of these daughters writes: "In memory's chart of the little world of childhood, does not some best beloved tree mark the center thereof, and is not the tree's morning or evening shadow the radius of the golden day's round?"

Most children are born with a love for flowers and trees, and all that is beautiful in nature, and even when reared under the depressing influences of the tenement houses of large cities, the oyster cans and old bottles on the window ledges filled with the growing plants testify that this love is difficult to crush out of the hearts of the unfortunates. But, alas! too many

children grow up without the refining influences of nature's floral gifts, and as a consequence their own natures are dwarfed and their lives blasted.

God help the boy who does not know
Where a tree would add berries to
Who does not see the forest's glory
When leaves are red and yellow
Whose childish feet can never stray
Where nature's best charms lie hid
For such a helpless boy I say
God help the little fellow

Trees are not only for ornament and shade, but for purifying and cooling the air in summer. The exhaling power of leaves has been most carefully investigated, and the most careless observer has noticed its effect in cooling the air when passing through a wooded road on a warm day in summer.

It is also a well known fact that trees radiate heat in winter, and that therefore there are in a neighborhood the more equitable is the climate. It is as much the duty of city and town authorities to plant trees as it is to build sewers, for both are sanitary measures, and it ought to be a matter of pride to the citizen to see that his street is not only healthful but beautiful.

Trees, as a rule, have been planted too thickly in most of our older cities. Large elms and maples are frequently seen crowded together, ten and twelve feet apart, and as a consequence they are misshapen and form a shade so dense that neither sun nor air can reach the houses. Experience has proven that it is a mistake to plant four rows of trees on any street that is less than one hundred feet in width, and that next to the folly of not planting at all is that of over-planting. Human beings require sunshine and air, but in many streets in our older cities these are excluded through the over-planting of trees, or the failure to remove them when they have grown so large that their top branches intertwine.

The American elm is the most beautiful tree for street planting, but in some localities it is so infested with insect pests that we should encourage the selection of other varieties when practicable. In Central New York the white maple is extensively used, and if it be given the proper care when young, it makes a noble tree at maturity. In many localities the sycamore is a great favorite, but it will not grow in the northwest. The linden, hackberry, Norway maple and the white ash are fine street trees, especially for narrow streets.

There should be a definite plan for all municipal improvements, and in the department of tree planting this can only be obtained through a commission having absolute authority to plant, prune or remove trees whenever or wherever, in its judgment, it is deemed advisable.

The Board of Park Commissioners of Minneapolis has authority under the park act to plant trees on any street and assess the cost of the same on abutting property. This authority, as a rule, is not exercised except when petitioned to do so by a majority of the residents of the street. The cost of planting and caring for the trees for three years is about \$5, but this sum is undoubtedly under, rather than over, the actual expense. The city being overlaid with gravel, it is necessary to remove at least five yards of this material, which is replaced with the same quantity of rich loam in which the tree is planted. It would be a paying investment for the owner of the property if double the amount of loam were furnished and charged for. Each tree is protected by a guard, which serves the double purpose of protecting the bark

from the rays of the sun and from the teeth of the horses. Many of the streets have been improved with uniform rows of trees, and the number of petitions for thus improving thoroughfares increases each year.

Some of the older trees which were planted before the care of this work was assumed by the Board of Park Commissioners show the usual haphazard way in which planting was done when each owner of a 40-foot lot exercised his own will. Some planted four or five trees, each of a different variety, and never cared for them. Others did not plant any, and a few set and cared for trees which have grown to be fine specimens of their kind.

Up to the time the park commission became the custodian of the street trees, more had been planted and had died, either through ignorance in planting, or through neglect, than were then growing. The loss since that time has been less than two per cent.

A commission having charge of the trees in the city of Washington has absolute control and care of them. It is decided to use a certain variety on a street, that variety is planted and there is no appeal from its decision. As a result, there is no city within my knowledge having so many unbroken rows of healthy trees.

Other cities in this country have undertaken the control of street ornamentation with great success, and it is to be hoped that all will follow their example. As a rule, the roadways on our residence streets are too wide and there is not space enough given for trees and other ornamentation. Fine effects are produced on an eighty foot street by making the roadways thirty feet wide, leaving twenty-five feet inside the curbing on each side, six feet of which next the lot line is for a walk and nineteen feet for grass and flower beds, or groups of ornamental shrubs, and shade trees planted from forty to fifty feet apart.

Many object to having so much space between the trees when they are young, and this accounts for their crowded condition in many of our older cities. To overcome this, some writers recommend planting rapid growing varieties between the more slow growing, which are to be removed when the branches of the permanent trees have grown to fill the space.

Another plan which I have seen in an eastern city gives a park-like appearance which is very pleasing. This gives a sidewalk next to the lot line six feet in width, a planting space for grass and trees six feet, two roadways eighteen feet wide and a center planting space of twenty feet filled with grass and shrubs, or grass and beds of flowers. There is no necessity for a roadway of over thirty feet in width on any residence street of sixty feet; one that is wider is entirely out of proportion.

There is not enough attention given to the ornamentation of streets. There is no reason why the residence portion of our cities and villages should not be made as attractive as a park. A few ordinances regulating the alignment of buildings, the setting of trees and care of planting spaces, would accomplish this desirable result. But, better yet, by the education of the people through such organizations as the Village and Neighborhood Improvement Association, the Brooklyn Tree Planting and Fountain, and the Park and Outdoor Art Association.



CHARLES M. LORING

WORKERS IN HORTICULTURE XV.

Charles M. Loring, whose horticultural endeavors have won for him the presidency of the American Park and Outdoor Art Association, is one of the substantial business men of Minneapolis. Mr. Loring was born in Portland, Me., November 13, 1833, and acquired his education in the public schools of that city. His father was the captain of a vessel of the merchant marine, and in his youth the son accompanied him upon many voyages. In 1855 Mr. Loring married and moved to Chicago, going thence to Minneapolis in 1860 and engaging in general merchandizing under the name of Fletcher & Loring, subsequently large manufacturers of flour. He was at one time president of the Minneapolis Board of Trade, served four terms as president of the Chamber of Commerce, declining a re-election, and was for eleven years president of the North American Telegraph Company, a position which he resigned a year ago. Mr. Loring did his first work for horticulture in 1865, by inducing the city authorities to improve a small triangular piece of ground in the center of the city. In 1870 an improvement association was organized of which he was elected president. For many years he labored to secure an act of the legislature to authorize the organization of a Board of Park Commissioners, and, when successful in 1883, he was made president of the board, a position which he held until 1894, when he resigned because of his ownership of a large tract of land which would be benefited by a contemplated action of the board. Mr. Loring has seen Minneapolis grow from a town of 2500 inhabitants to a city of over 200,000, and to his efforts may be credited a large part of its beauty. While he has not delved in the soil, few men have done more in the interest of good horticulture.

Fruits and Vegetables.

AN ASSORTMENT OF STRAWBERRIES.

The past season was an uncommonly good one for strawberries. There was an abundance of moisture, with a cool temperature, conditions which suit the straw-

berry exactly until ripening time comes, when dryer weather is better.

There were many new kinds on trial this year, and with others introduced within the past few years there are now many kinds evidently worthy of a place in gardens alongside such old favorites as Cumberland, Capt. Jack, Sharpless, Gandy and Buback. New York and near by markets see great quantities of Gandy brought in from southern New Jersey. So popular is this sort for market purposes that the sellers are apt to call other sorts Gandy when short of the real thing.

Among other kinds doing well almost everywhere and worth planting are the following: McKinley, Seaford, William Belt, Brandywine, Marshall, Clyde and Nick Ohmer. These sorts are such as produce large, healthy looking leaves, the first essential of a popular variety. Seaford, with me, made uncommonly large leaves. The fruit was borne on stiff stalks, well above the foliage, and in quality was very good. McKinley was good in the same way.

During the strawberry season I made a flying visit to North View, the home of Wilmer Atkinson, of the *Farm Journal*. The farm and trial grounds adjoin the home and it was a treat to be among the strawberries, which were then in their prime. The proprietor, I found, was an admirer of the Wm. Belt and certainly they were producing fine crops of fruit. Sorts with poor foliage are not given a place at all, as they cannot produce good fruit. The fruit of the Brandywine is excellent, but I should say hardly the equal of Wm. Belt. Marshall, Clyde and Nick Ohmer are large sized berry producers.

Strawberries are now grown with more room to individual plants than used to be given. One plant in good soil and well cared for will give more fruit than a half dozen which are crowded. The keeping up of old beds year after year is another thing which is not practiced as it once was. Two seasons are long enough for any bed, and some of the best growers are satisfied with one season. It is a fact that a strong runner set in July or August in such a way, with ball or otherwise, that there is no flagging, will give as good results in the way of fruit as a spring set plant, grown for a year before fruiting. Growers will see that some perfect flowered sorts are set with the pistillate ones should any of the latter be used. The Seaford for instance, is pistillate. Two very good late varieties are Gandy and Parker Earle. Gandy produces the larger berry, but perhaps is not as abundant a bearer as Parker Earle.

Philadelphia. JOSEPH MEEHAN.

BEST OF ALL TOMATO.

The specimens from which the accompanying illustration was taken were grown by Edwin Lonsdale, of Chestnut Hill, Philadelphia. Best of All is an exceedingly prolific variety and a capital sort for forcing under glass. Here are the weights of the fruits in one cluster: 10 $\frac{1}{2}$, 10 $\frac{1}{4}$, 6 $\frac{3}{4}$, 9 $\frac{1}{2}$, 8 $\frac{1}{2}$, 7 $\frac{3}{4}$, 8 $\frac{1}{2}$, 7 $\frac{1}{2}$, 1 $\frac{3}{4}$, total, 72 $\frac{3}{4}$ ounces. From all appearances Sutton's claims for this tomato are well founded. They are as follows:

"When first offering this fine tomato in 1895 we especially recommended it as the most profitable variety that could be grown for market purposes, and increased experience has confirmed our opinion. It sets very freely and is an immense cropper, producing heavy bunches of fruit at short intervals all over the plant. In a

given space we question whether any other variety would produce so great a weight of fruit. A peculiarity of this tomato which has attracted the attention of experts is that the first cluster is borne very low on the stem. The color is a deep scarlet; form admirable; good size, and the fruit is so solid that very little seed is produced."

I do not know whether any one has tested Best of All in comparison with the Lorillard which is at present considered our best forcing variety. When selected stock of the Lorillard is available it is hard to beat, but in Best of All there are evidently some additional points of excellence that make it a welcome addition to our list of forcing tomatoes for market purposes.

G. C. WATSON.

HOW TO GROW MUSHROOMS.

Procure fresh horse droppings in as large a quantity as possible, shake out the longest straw and add to the pile one-third its weight of new loam, intermixing thoroughly. The compost should be kept under cover, so as to preserve it from wetting by rains, until a sufficient quantity has been collected to make a bed of the desired size.

In making the bed spread out a layer of the material thus prepared from three to four inches deep and of the required dimensions as to length and width. Tread or tamp this layer until it is quite firm and add others in the same way until the bed is ten or twelve inches in depth.

The temperature of this compact mass of soil and droppings will in a few days rise to 100° or over, as may be ascertained on plunging a thermometer into it, and then gradually decline. On going down to the 90° mark it will be in a proper condition for spawning, and this is accomplished by making holes three inches deep and twelve to fourteen inches apart in the bed with a hard trowel, inserting therein pieces of brick spawn about two inches square and replacing the compost.

On the completion of this operation it will be found necessary to level the surface again, and the bed should also be made as firm as before spawning. About

one week later apply a layer of loam one and a half inches thick to the surface, smoothing and tamping it lightly with the back of a spade.

The temperature and moisture of the mushroom house must now be given daily attention, maintaining the former at from 60° to 70° with a moist air. The bed will not need water until the mushrooms appear five or six weeks after spawning, and when they show on the surface as large as peas, a light watering should be given with water heated to about 100°.

I find the best temperature of a mushroom house to be 60°, with the air moist to a perceptible degree only. The surface of the bed should also be kept moist, applying water when necessary by means of a watering pot with fine sprinkler, or a hand syringe, using water never below 80°. Air should be admitted to the house from the top, and must always be under control at a temperature never below 45°. Upon entering or leaving, all currents of air likely to pass over the surface of the bed should be guarded against.

The dry spawn will become active fourteen days after insertion in the bed, but in cases where the bed has been allowed to get dry after the cessation of fermentation—which often happens in the absence of close attention—when two weeks have elapsed since spawning, apply water through a fine sprinkler until it penetrates the bed to a depth of two inches, with the water at 90°, at the same time increasing the house temperature 10°. Mushrooms will then appear in four or five weeks.

JOHN G. GARDNER.

HORTICULTURISTS INTERMINGLE.

The fraternal relations existing between the horticultural societies of southwestern Iowa and Nebraska culminated in a union meeting at Board of Trade Hall, Omaha, July 26 and 27. The meeting was very well attended by the leading horticulturists of both states. The general desire to get through with a three days programme in a day and a half, that all present might attend the exposition, shortened the discussions.

The first order of business was a paper



BEST OF ALL TOMATO.

on packing and marketing apples by G. S. Christy, of Johnson, Neb. Mr. Christy is a large grower, and he urges the importance of grading carefully, and packing in a way to have fruit arrive at its market in perfect condition. He stated that this district produces apples of the best quality, and with proper care and study on picking, packing, and marketing, we have an unlimited market for fruit. Eastern buyers are already in the field contracting for orchards. He recommended careful hand picking and packing.

This paper was followed by J. P. Jackson, of Glenwood, Iowa, who read a valuable paper on different varieties of apples. This gentleman has over 200 varieties of apples in his orchard. He would not recommend the average orchardist to grow my large number of varieties but the experimentalist with time and means for investigation finds pleasure in this class of work. He recommends at some length many of the new varieties, thought we had a prospect of profit from some of them, but for the present large planters should use tested varieties.

Peter Younger, Jr., superintendent of the Nebraska horticultural exhibit of the exposition, has kept careful record of the behavior of each and every variety handled, giving valuable data regarding the varieties which best endure cold storage, and also data regarding summer fruits which have arrived in best condition and of best quality. One hundred and sixty barrels were placed in cold storage in October last, and they began making use of them on the tables June 1. So far the fruit has kept much better than expected. But few of the apples are decayed, usually not more than three or four in a barrel. On the basis of a score of ten points, Ben Davis, Winesap, and Genet have come out in perfect condition. The condition of Grimes' Golden is represented by 7, Missouri Pippin 8, Iowa Blush 8, White winter Pearmain and McIntosh Red 9. On the other hand Walbridge has not retained its color or come out in as good condition as expected. Its condition was at first rated at 5, and later dropped to 3. Yellow Bellflower 6, Roman Stem 8, but after July 14 inclining to become mealy. The method of packing has been to wrap each apple first in a thin waxed paper and then in a thicker paper, at a cost of about fifty cents per barrel. It is found that wrapping in two papers, the inner of which was something of the texture used to wrap oranges but coated with a preparation that makes it nearly moisture proof, is a most effective method of carrying fruit through and bringing it out in good condition. The very superior quality of fruit stored and handled by this process, and its remarkable keeping quality, some of them standing up for a number of weeks after placing them on the tables at the exposition, makes this method of packing apples for cold storage well worthy of study and imitation.

In the afternoon session Mr. J. A. Hogg, of Shelton, read a paper on the codlin moth. This gentleman is located in Buffalo county on a high table between the Platte and Wood rivers, and is quite successful in growing fruit. He finds clean culture advantageous, and in addition to spraying for codlin moth he makes an effort to hunt up and destroy during the winter and spring such of the larvæ as have concealed themselves under the rough bark at the forks of the limbs or on the trunk of the tree, his experience being that it pays to spend an increased

amount of time in destroying the larva in their winter quarters than to depend wholly on spraying. His trees at present show only about five per cent of wormy apples.

J. P. Dunlap of Dwight, in the discussion following this topic, stated that his method was to pile up the wormy fruit, cover it with sheets of burlap. The worms crawling out of the apples were apt to locate themselves and their cocoons on the under side of this burlap, which after some weeks was turned over to the chicken yard. He also found that the larvæ of the codlin moth showed a preference for lodging on groups of Scotch pine which he had in the vicinity of his packing ground, and that before spring the birds searched them out and destroyed most of them.

The experience of many members and the discussion along this line developed the thought that very clean culture affords less shelter for the codlin moth on or near the ground, drives them to the trees where they can be destroyed by scraping off the rough bark, and also by lodging under moth bands and later destroying them.

In the absence of Mr. Needles, of Atlantic, Iowa, two papers on strawberry culture, one under irrigation, the other under dry farming, were presented by E. F. Stephens, of Crete, Neb. On the 49,000,000 acres in Nebraska, about 1,000,000 are covered by ditches already constructed and in operation. About 2,000,000 acres more can be irrigated. With our very fertile soil, unequaled transportation facilities, and with the waters of the Platte, Republican, and the Loups abundant in quantity, easily led out into the ditches and applied, irrigation per acre is less expensive in Nebraska than in most other states. We should at least grow fruit enough to supply our own markets, and with added experience, ship to others more distant. At present, to a considerable extent, our markets are supplied with strawberries from Oregon, Utah and Colorado, and this in spite of the fact that Oregon fruit pays an express tariff of \$3.50 per hundred pounds, or \$2.50 per hundred pounds in car lots, giving us a protection of 70 to 90 cents on a case in distant express charges. The express rate from Ogden to our leading towns is \$25 per thousand pounds, and from Denver \$17.50 per thousand. Under protection of this heavy express rate, with proper study and care, the growing of strawberries should be rapidly developed and built up into a profitable business. To guard against the spring freeze, many incidents have developed showing that the free use of water on cold nights was a nearly perfect safeguard against harm from frost in the month of May.

"Peach Culture and Varieties" was discussed by J. M. Russell, of Wymore, Neb., a veteran peach grower. This gentleman commenced growing peaches in Nebraska extensively some seventeen or eighteen years ago, and at present has about 100 acres of peach orchard near Wymore, from which he expects to market upwards of 60,000 baskets this season. Of the 100 acres forty acres near Wymore are yet young and not producing this season. Near Lincoln they have recently planted another peach orchard of 150 acres, aiming to avail themselves of the unequalled distributing facilities of the net work of railroads centering at Lincoln. Mr. Russell brought about a dozen varieties, and many branches showing clusters of peaches in various stages of growth as an illustration of the com-

parative size at this time, the maturity and the period of ripening of the various varieties with which he was experimenting. He regards the Alexander, a semi-cling, as the earliest productive peach. His earliest freestone was one of his own seedlings, Russell's No. 1. Mr. Russell had fine specimens of Triumph which seemed to be doing well with him but was not a perfect freestone. He had very fine clusters of Hale's Early, Hill's Chili, Wager and many other varieties. The period of ripening with him at Wymore in average years, Alexander, July 4-10; Early Rivers, July 18; Hale's Early, July 29, Russell's No. 3, August 10; Coolidge Favorite, August 12; Champion, August 20; Wager August 26; Elberta, September 1; Wright, a productive local variety, September 2; Heath Cling, September 21. Previous to this season Mr. Russell had not thought well of the Elberta, but this year it was doing better. Mr. Russell is very well pleased with the behavior of the peach in Nebraska and with their profits in growing the same. He thinks the essentials of success are careful and vigorous culture, the proper and perfect ripening of the wood at the approach of winter, and would plant but a narrow list of those so far proved successful.

Hon. Silas Wilson, of Atlantic, Iowa, followed in the discussion of the behavior of the peach, and particularly commended the behavior of Bokhara No. 3, which with him had successfully endured a temperature of one year 25°, another 28° below zero, and had the following season borne some fruit. He urged that we be careful in looking for Bokhara No. 3 not to be misled or confused by the large number of varieties of the Bokhara family which have not proved successful. Mr. Wilson developed considerable enthusiasm by urging that we stand up first for the United States and our navy, having faith in our country, our mission, and our fruit; that Iowa and Nebraska were fruit countries and peach countries; that the day would come when Iowa and Nebraska would stand in the front rank as peach growing states, and that we as horticulturists should have more faith in our business and ourselves, and should push the work of fruit growing with increased confidence and vigor.

The peculiarity was remarked upon that the same years young trees from three to six years old might fail to set a crop, the old orchards twelve to eighteen years of age grew fine crops, for the reason doubtless, that growth was less vigorous, they were not tempted to grow so late in the fall, and their fruit buds were more perfectly ripened.

W. M. Bomberger called attention to the fact that dry falls and well ripened trees, usually meant hardy trees and that the question of hardiness was very generally determined by the condition in which the trees entered the winter. Trees that were completely ripened, both wood and fruit buds, were very likely to be considered hardy, and to winter well.

The discussion of the growing of the raspberry led by A. Van Kirk, of Glenwood, Ia., and C. C. Marshall, Arlington, Neb., developed the fact that the average profits in growing and marketing the black raspberry were about \$125 per acre. T. G. Wallace has one and a half acres of a new red raspberry which propagates from tips, seems to be quite hardy and fruits freely. Samples of bushes and fruit were on exhibition. It has the peculiarity of bearing on the old wood as well as the new wood, and continues in bearing nearly a month.

J. P. Hess, who is growing blackberries

extensively at Council Bluffs, explained his methods. He plants on soil not the richest, since the most fertile land grows too rank a cane, which is more likely to winter kill. He prefers land which has been run to farm crops for a number of years, and lost a little of its first fertility, and plants in rows nine feet apart. His crops average from 150 to 200 twenty-four quart crates per acre. He thought they would pay well at \$1 per crate. This year his fruit is bringing from \$1.25 to \$1.75 per crate. Snyder is the best commercial variety. Other growers were careful not to allow their matted rows to be more than eighteen inches in width, and all agreed on the necessity for thorough surface culture for the retention of moisture. One gentleman would have his fruit house cooled by sub-earth ventilation with the idea of reducing the high temperature from sun heat before shipping.

A paper read by L. D. Stillson, of York, president of the Beekeepers Association of the state, on the influence of the bee on the fruit crop, highly commended their work in pollination. This called out considerable discussion, all in favor of the bee as an active friend of the horticulturist. Hon. R. B. Spear, of Cedar Falls, Ia., gave a very instructive and interesting address on the two most important conclusions in fifty years experience and experiments in horticulture. Mr. Spear has been connected many years with the experiment station work in Iowa, and has given various horticultural problems a great deal of careful study. He urged that twenty varieties were very much more profitable than 150, that ten were better than twenty, and for the commercial man five were better than ten. He urged the importance of maintaining the fertility of the soil, such cultivation of the soil as would retain moisture, and in particular to keep up the supply of humus in the soil, for this purpose using mammoth clover, sweet clover, or other nitrogen gathering crops, with a view to increasing the stores of nitrogen and humus in the soil.

M. J. Grahm, of Adell, Ia., gave a resume of his experience of fifteen years in Iowa pear growing. On certain soils he thinks success may be achieved, particularly with varieties like Longworth, Krull, Alamo, Lexington, and Koonce as standards. As dwarfs he favors Duchess, Howell and Beurre d'Anjou. His soil is cleared timber land. He has planted about 1000 dwarfs and has a small orchard of standards.

After the discussion of other papers of interest to horticulturists the meeting adjourned that all might visit the exposition. A committee was appointed to arrange for a joint meeting to be held next summer in Iowa. The feeling was general that joint meetings were interesting and profitable, and the fine samples of apples grown in '97 and the summer fruits of '98, with which the tables were covered, added much to the interest of the meeting. E. F. STEPHENS.

Miscellaneous.

BULB GROWING IN NORTH CAROLINA.

I am still at work endeavoring to demonstrate the adaptability of our soils and climate here to the production of flowering bulbs on a commercial scale. It has been hard for me to get those in control to realize that there is any import-

ance to our people in anything beyond corn, potatoes and cotton, and hence my work has been retarded by lack of means for putting the work on a scale sufficiently large to attract the attention of the trade. But we have done enough to demonstrate that we can grow here with perfect success most of the bulbs now imported for winter forcing. In the case of *Lilium candidum* we have grown bulbs which were vastly superior to those from France and the same can be said of the Roman hyacinth. Last fall I tried a small lot of small sized and badly diseased bulbs of *Lilium Harrisii*. They grew healthily and though the bulbs are still small we feel sure that the matured crop will be fine and healthy. More than this, we feel certain that we can produce these in full time for early forcing. *Narcissus Tazetta*, the Chinese sacred lily, made bulbs here that bloomed more quickly in water than the imported ones. White Italian hyacinths make bulbs that look like Dutch, and much larger than the Dutch we have been getting lately. Dutch hyacinths are this year larger and finer than any that will be imported if the accounts from abroad are correct. We are hoping to get the Department of Agriculture at Washington interested in this matter so that we can get them to divert a little of the money now wasted in common garden seeds to experiments that may establish a new industry here. We have, we believe, demonstrated that the true bulb soil of our state is the medium sandy upland near the coast and not the deep sand of the sand hills where we have made some experiments. They suffer there too much from drought. We have here a vast area of good soil in a fine climate in our lower coast region, and I am trying to get some of the northern colonists at Chadbourn to take an interest in bulbs. The great difficulty here, aside from lack of experience, is the fact that it requires some expenditure of capital to get started on a commercial scale and our people are poor and indisposed to take risks. If some of the northern dealers would put a large lot of stock here the matter could soon be settled, and the industry put on its feet. That we can produce the bulbs I am satisfied beyond a doubt, and that we can grow them at a profit to the growers we feel quite certain. W. F. MASSEY.

Raleigh, N. C.

NOTES FROM GERMANY.

One of the best fuchsias for hanging baskets which I have seen is that known as Trailing Queen. Some very effective plants of this variety are now to be seen here and there, and so far as known, they require no special treatment. A single cutting makes a plant three feet in diameter within twelve months.

In *Sarothamnus scoparius* we have here a fine flowering shrub, and it is now in full bloom in the Royal Botanic Garden. When this plant is grown near the sea, it attains a height of from twelve to fifteen feet, and during May it is so thoroughly covered with its large yellow flowers that not a leaf or twig is to be seen. In the interior the plant is killed to the ground by the severe frosts which occur about once every three or four years. It likes a sandy soil.

A new forget-me-not, *Myosotis alpestris stricta*, sent out by F. C. Heineman of Eriurt, is attracting considerable attention, and it was awarded a silver medal at the last meeting of the Berlin Horticultural Society. The plant is erect, eight to ten inches high, and densely branched. Each individual specimen

measures about three inches in diameter, a mass of bloom from bottom to top. There are three forms of the plant, varying in the color of the flowers, which are either blue, white or rose.

Besides the common calla lily (*Richardia Aethiopica*), many other aroids with dark spathes are now cultivated quite extensively. These "black callas," are much esteemed by some amateurs, although their odor in most cases is not altogether agreeable. A good plant of this class is *Ischarum eximium*, with small lance-shaped leaves. *Arum Discoridis*, however, from Asia Minor, is much more worthy of attention. In general appearance it resembles the white calla, but the spathes are deep purplish, spotted with green at the apex.

Orange blossoms for wedding decorations cannot be had here during the winter months in sufficient quantity, and to meet the demand *Staphylea Colchica*, is forced as a substitute, providing abundance of white flowers which in appearance and fragrance so closely resemble the genuine article that the laity cannot tell the difference. It is said, also, that the flowers of *Prunus Chinensis* are made to do duty for those of the myrtle. *Staphylea Colchica* is a shrub which thrives very well in the open air and blooms here during May, some time before *S. pinnata*, the flowers of which are much like those of the lily of the valley.

For shady situations there is now used a new material, viz., *Cetraria Islandra*, the Iceland moss, which gives good results when used in the right way. I have seen this plant in the yards of hotels, surrounded by large buildings, where one ray of sunshine hardly every penetrates, and it produces a fine effect with the grass and gravel. A good turf is only possible in such situations when renewed frequently; flowering plants must be replaced weekly, and only such plants as *Phoenix Canariensis*, *Araucaria imbricata*, etc., will survive for any considerable time. But the Iceland moss seems to prefer these conditions.

Tulipa Greigi is by far the most elegant plant of the genus in cultivation, distinguished as well by the immense size of the flowers as by the brownish tint of its leaves. It is said that the bulbs make no offsets with us, so that it is necessary to import new stock every year from Central Asia. Whether this be true or not, once imported and properly planted, the bulbs supply a profusion of excellent cutting material for many years without further attention. This is one of the parents of many desirable hybrids, all of which are easily recognized by the tinted foliage of *T. Greigi*. It is a pity that many of these fine bulbous plants from Central Asia, collected by the famous traveler, Dr. Albert Regel, are not more generally cultivated.

Experiments have shown that the best fertilizer for fruit trees is a mixture of nitrate of potash and phosphoric potash in equal parts. It should be applied to the ground underneath the trees at the rate of four ounces to each ten square feet of space. This fertilizer is now much used in orchards as well as in vineyards and tobacco fields. Some other artificial fertilizers under various names are used in this country successfully, but all are manufactured after Prof. Wagner's formula—twelve to fourteen per cent phosphoric acid, twelve per cent nitrogen and twenty per cent potash. This compound has a remarkable effect on the flavor of fruits. Pears, for example, which under ordinary circumstances have only a low culinary value, are equal to the best table

fruits when efficiently treated with the fertilizer.

Last spring I was rather surprised with the behavior of a young peach tree on the grounds here. The variety is called Amsden, and while the tree flowered well, it did not set a single fruit. On investigation it was found that there is no other peach tree in the neighborhood, and all the flowers of the tree in question proved on examination to be what botanists term proterandrous, that is, the anthers ripen and shed their pollen long before the stigma of the pistil is ready for fertilization, and thus fruits are impossible, unless pollen from some other source alights upon the reproductive organs at the proper time. But all the flowers of this tree developed at about the same time, and there was no pollen available when it was needed. UDO DAMMER.

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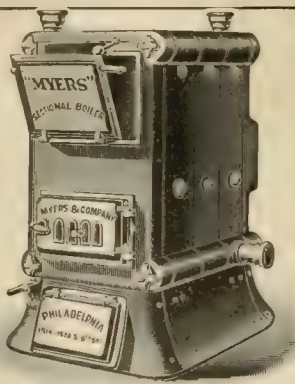
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A PLANTATION OF LILIUM CANDIDUM.

The Flower Garden.

BEDDING PLANTS.

ED. GARDENING:—Will some of your practical readers give a list of the most suitable material to plant in a circular bed from twelve to fifteen feet in diameter or a foot or two larger if necessary in order to contain a suitable number of plants. Name the plants, give the number required, situation and distance apart. It is desired that the bed be sub-tropical in effect, tall and imposing. The material should be limited to that which may be obtained at a reasonable cost, or raised in a small greenhouse.

Chicago. J. C. MORGAN.

In reply to Mr. Morgan's inquiry I have figured on a bed eighteen feet in diameter, which I think will be more

effective than a smaller bed. For the outside circle a foot from the grass border I would use *Caladium esculentum*. With the plants eighteen inches apart it will take thirty-four of them. Next, a circle of *Canna Chas. Henderson*, thirty-one plants, eighteen inches apart and the same distance from caladiums. Fill the remainder of the bed with *Canna Alphonse Bouvier*, forty-three plants eighteen inches apart, leaving room in the center of the bed for a plant of *Ricinus Zanzibarensis*.

A sheltered situation with plenty of sun is the most desirable. If the bed is well enriched with rotted manure the plants can be planted farther apart, say about two feet. All of these plants can be started in an ordinary greenhouse or hot-bed. To be successful with them it is necessary to have good strong growths when time arrives to plant outside. Use good, rich soil, and a mulching of three inches of rotted manure on the bed. Keep it

well watered especially in dry weather, and you will have a bed that you will admire and be proud of.

Ithaca, N. Y.

ROBERT SHORE.

BULBOUS PLANTS.

Sure returns from small investments of time, money and labor seems to be the rule in relation to flowering bulbs. The succession of spring blooming Dutch bulbs begins the display secured in this simple way, which may be continued till fall by the use of gladioli, montbretias, lilies, etc.

At the proper season the smooth, husky or plump and scaly bulbs are tucked comfortably away in good garden soil and almost before one thinks of them again they send up a growth of blooms surprising in size and number, and almost invariably having splendor of coloring and perfection of form, to which is frequently added rare fragrance.

There is no more striking display of plants in flower than a belt, bed or row of stately *Lilium candidum* in full bloom. The accompanying illustration shows fifty-seven stalks of blooms that had been opening for ten days during the hottest part of June, 1897, when the thermometer registered between 95° and 100° every day for more than a week. When the photograph was taken, on June 21, the first flowers that opened had either fallen or are seen to be withered, but the wonder was that any withstood the fierce heat. They were deeply planted and no heating manure was allowed to come in contact with the bulbs.

FANNY COPLEY SEAVEY.

RUDBECKIA GOLDEN GLOW.

In the issue of GARDENING for September 15, 1896, this plant, then a novelty, was illustrated. Nearly two years later I again photographed the same group and the picture is here reproduced. This species has now been widely disseminated, forming one of a trio of most excellent recent introductions, *Hydrangea paniculata grandiflora* and *Clematis paniculata* being the other two. It is a singular fact that they all bloom late in the season, when most needed, and are all of the easiest culture. Each requires an ample supply of moisture for the best results, and are perfectly hardy. Luckily they combine three divisions of plant life, the shrub, the perennial and the vine. Japan furnishes two of them and the western prairies the third, the *Rudbeckia laciniata* fl. pl.

We are all familiar with the black-eyed Susan, the *Rudbeckia hirta* of the botanists. *R. laciniata* is a near relative, and in its typical form somewhat resembles it, except that the disk flowers, those minute blooms covering the cone, are a dull greenish color, instead of yellow, and the whole flower larger. In the doubling-up of the Golden Glow, these disk flowers have changed into ray flowers. The black-eyed Susan will thrive in dry soil, but the other being indigenous to the borders of swamps and low meadows, requires a fair amount of moisture. The origin of this double form is yet unsolved. About 1894 John Lewis Childs found it in his grounds among some unknown plants sent him by some of his customers. From it he increased the stock that has, in the main, reached the gardens of the United States and Europe.

While I bought three plants in the spring of 1896 from Mr. Childs, I had three given me in the fall of 1895 by Mr. Jensen, the superintendent of Humboldt Park, Chicago, who called it a double *R. laciniata*. Mr. Childs gave it the name Golden Glow, and I bought from him in order to compare it with those received from Mr. Jensen. They proved identical. Mr. Jensen had seen, in the fall of 1895, a large clump of it in the garden of a German in Chicago who had received it a year or so before from a relative, and traded some geraniums for a few roots. This traces it back to 1893 or 1894. At this later date it was blooming both in Mr. Child's place and in Chicago.

A writer in an English paper about a year ago claimed that it was introduced to English gardens nearly twenty years ago under the name *R. laevigata*. Mr. Falconer in an editorial note in GARDENING dispels this illusion in a clear and forcible manner. The mere fact that a plant so attractive in all its parts, so hardy in constitution, so readily grown and rapidly increased, was unknown in this country until within the past few years, even in the largest collections and

among the most intelligent professionals and amateurs, is evidence enough that it was not known in English gardens twenty years ago.

The group illustrated is composed of the three plants obtained from Mr. Childs which were placed in their present position in the spring of 1896. Some young plants from the outside of the group have been taken away. The group is supported and protected from damage by the winds by an iron hoop four feet in diameter placed about four feet from the ground and fastened to four strong stakes set among the plants. This is put in place when the plants are some five feet high. The hoop—which is of round iron—is slipped over nearly all the plants. Enough of the outer row of stalks are left outside the hoop to hide it and the stakes; these are then distributed evenly along the hoop and tied loosely, allowing each stalk three or four inches play. When a heavy rain accompanied by winds comes they are apt to become top heavy and may break. In such cases I run temporarily a heavy but soft string around the whole group, well up towards the top, and draw it in quite closely—thus bunching it as one would a sheaf of wheat. This is removed when the storm is over and the blooms dried off. In this way one stalk supports the other and damage is seldom done. It is such a striking ornamental group upon the

lawn, that it pays to devote some extra care to it. The drip from a lawn hose connection is carried under this group by tiles, thus affording it an extra amount of moisture. Where plants are not given enough water the blooms are much smaller.

Mr. A. Herrington, of New Jersey, is blooming this year the English plant under the name of Autumn Glory, and we would like to hear from him.

W. C. EGAN.

HARDY HERBACEOUS PLANTS.

It seems strange that these very useful plants are not more generally grown by florists, especially such as afford good flowers for cutting. Perhaps one reason, if not the chief, is the general impression that spring is the only proper time for planting all herbaceous perennials. This is not the case, as a large proportion do much better if planted during the last of August and the whole of September; others if planted in October and first half of November. The spring here is so short as a rule, and the early flowering species and varieties start so quickly into growth, that quite often a season is lost by putting off planting till spring.

We have had great success in planting spring and early summer flowering plants during August and September; late summer and fall flowering plants in October



RUDBECKIA LACINIATA FL. PL.

and first half of November. There have been so many notes on herbaceous plants in these columns in which time of flowering and descriptions have been given that it only seems necessary to give lists of some of the plants we have successfully planted at the seasons named.

August and September—*Achillea*, *aconitum*, *alyssum*, *anthemis*, *anthericum*, *aquilegia*, *arabis*, *campanula*, *centaurea*, *cerastium*, *Clematis erecta*, *coreopsis*, *delphinium*, *dianthus*, *dicentra*, *echinops*, *eryngium*, *gaillardia*, *geranium*, *gypsophila*, *Helenium Boulanderii*, *hemerocallis*, *iberis*, *iris*, *supinus*, *lychnis*, *Mertensia Virginica*, *monarda*, *myosotis*, *œnothera*, *papaver*, *pentstemon*, *phlox* (spring flowering), *primula*, *pyrethrum*, *ranunculus*, *sedum*, *Spiræa filipendula fl. pl.*, *thymus*, *trollius*, *veronica* and *viola*.

October and November—*Aconitum autumnale*, *Asclepias tuberosa*, *aster*, *astilbe*, *boltonia*, *campanula* (late flowering), *culalia*, *funkia*, *Helenium autumnale*, *helianthus*, *heliopsis*, *hibiscus*, *liatris*, *pæonies*, *Phlox decussata* varieties, *Phlox suffruticosa* varieties, *rudbeckia*, *spiræa*, and many of those that will plant well in August and September.

Following are descriptions of some of our newest *Phlox decussata* varieties in bloom during the week ending July 30:

Coquelicot—Certainly one of the brightest, if not the brightest, *phlox* yet introduced; it was awarded a first class certificate of merit by the Royal Horticultural Society of England. Flowers of good size, bright salmon tinted with orange, several shades brighter than General Chauzy and Lothair.

Esperence—Large flower, pink, light center, solid rounded truss. Hardly bright enough.

Fernand Cortez—Catalogued as light bronze, very good, but one has to look very closely to see the bronze; large finely shaped flowers, dark pink with bronze tint toward the center. Trusses rounded and very full.

Lumineux—Large well formed flowers, clear bright pink, lighter towards center; solid rounded clusters. Somewhat like Le Soleil, but much brighter.

Mars-le-Tours—Beautifully formed flowers, bright carmine shaded to white, solid pyramidal truss. The most distinct of the set.

Parachute—Dwarf; crimson with light center, panicles much branched. Distinct in having the petals reflexed in the young flowers.

Rodin—Dwarf; well formed flowers, lavender and white; trusses much branched. Distinct but not very bright.

Evenement—Large well formed flowers, clear pink; good solid clusters.

Fantasie—White, marbled with purplish violet; rather dull and not distinct enough from many others.

Lord Rayleigh—Large well formed flowers, dark violet shading to blue. The nearest to blue yet introduced. Awarded first class certificate of merit by the Royal Horticultural Society of England.

Mme. Miolan-Carvalho—Very large flowers of good substance, creamy white, slightly feathered with pink.

The following varieties are some we imported from Scotland on account of their extra large panicles:

Bicolor—Flowers medium size, well formed, light salmon pink with large well defined bright crimson eye; trusses pyramidal and branched.

Mrs. Keynes—Flowers small, white, slightly feathered with pink; large, well branched pyramidal heads.

Massachusetts.

R. N.



DEUTZIA SCABRA.

Trees and Shrubs.

SHRUBBERY NOTES.

We are not quite within the Arctic circle at Burlington, Vt., and we often think that this is one of the prettiest towns in the United States, but we all miss many of the pretty shrubs and trees which are hardy and thrifty in warmer climates. When we go as far south as New York, even, in the spring we see Forsythias and *Lonicera fragrantissima*, which, though they grow here under protest, have a strange look to us when we see strong, thrifty flowering specimens in Central Park or in Prospect Park or at Morning-side Heights. And a little later the magnolias, rhododendrons and paulownias look still stranger to our eyes.

Hardiness against cold weather is an important quality in shrubs for our gardens, and we have a good opportunity to judge which species are thoroughly reliable. Among the spiræas the Van Houttei and *S. aurea* are by far the best. *S. prunifolia* and *S. Thunbergii* are planted in all good borders, for they are almost indispensable in spite of the fact that they both usually kill back severely here. The deutzias are commonly reliable here. This spring they were especially fine, both *D.*

gracilis and *D. scabra* carrying the finest and heaviest loads of blossoms I ever saw. *Lonicera Tartarica* is hardy and is frequently planted. The large snowball, *Viburnum Opulus*, is frequently planted, and though it does not kill back much, it seems always to be unhealthy and much subject to attacks of aphides.

Probably the greatest favorite among all hardy shrubs in this place is *Hydrangea paniculata grandiflora*, of which one sees hundreds of plants in all sorts of situations, good, bad and indifferent. This beautiful plant is very frequently set singly on the open lawn, a position in which it almost never looks well. Single plants must be large and widely branched, full clear to the ground, to look well; but instead of that, it is the unfortunate practice to trim them up like standard currant or gooseberry bushes, leaving them naked and graceless. They are best when thickly planted in borders and when massed up in front with some small plant like *Spiræa Thunbergii*. *Rosa rugosa* seems to do well here, but has been planted only a little. The native dogwoods, of course, are hardy and fine, though not often enough used. Very few of the privets do well here, and I think there is not a good privet hedge in this vicinity.

F. A. WAUGH.
[*Deutzia scabra* is perhaps better known as *D. crenata*.—Ed.]

PRUNUS PISSARDI.

Is *Prunus Pissardi* short lived? This is a question recently called to my attention and while my experience leads me to answer the interrogation in the affirmative, I sincerely hope that I am mistaken. However, I have become quite skeptical as to the value of this much admired tree or shrub, but I hope that these remarks may elicit some facts from other parts of the country which may be of value to us here.

The trees with which I gained this experience were planted somewhat over ten years ago, and out of a group of a half dozen or more only one sickly specimen survives. The others died in the past two years. I do not think that the soil or situation can have anything to do with it for in that respect I should consider them rather favorably located in comparison to the surrounding country. The trees are to be found in Mt. Olive Cemetery, situated on the eastern slope of a ridge which once constituted the beach of the lake.

The tree which has survived is bleeding considerably and cracks badly along the main trunk, the effect of which is noticeable in the dead top. From its appearance this specimen must have once enjoyed splendid health.

Is it our erratic western climate which is unfriendly? *Prunus Pissardi* is probably a variety of *Prunus cerasifera* and is also known under the name *Prunus cerasifera* var. *atro-purpurea*. It was, I believe, introduced by Mr. Pissard, head gardener to the Shah of Persia; its home is Ispahan, Persia. J. JENSEN.
Chicago.

CERCIS CANADENSIS.

I heartily agree with John Craig that our native shrubs are deserving of more attention than they receive. As he truly says, *Cercis Canadensis* is most lovely in early spring. I would ask him, however, if the particular specimen he mentions may not be the Japanese species, *C. Japonica*? The description fits it exactly. At any rate the Japanese is superior in color to the native one; it is of dwarf, sturdy growth and has thick, lustrous green leaves. In addition to the charm of the flowers, the foliage itself is beautiful, making the shrub an attraction the season through.

The Judas tree, as the cercis is called, possesses the peculiarity of flowering year after year from the old wood. It is a singular sight to see a cluster of flowers coming out on branches many years old. The native Judas, *C. Canadensis*, is wild over a large portion of our country, attaining the proportions of a small tree. The Japanese is rarely seen above a large shrub size. JOSEPH MEEHAN.
Philadelphia.

ARBOR VITÆ FOR HEDGES.

The remarks of Mr. Douglas and Mr. Egan on arbor vitæ hedges, page 323, lead me to say that in New Jersey and Pennsylvania I have not noticed the dying out of this evergreen in the way they describe. The only thing that kills them here is the bag worm, which, I regret to say, is often permitted to do its work through the ignorance of both gardener and employer. It is by no means uncommon to see yards of a hedge almost defoliated, the worms still at work, and those in charge apparently entirely unaware of what is going on. A party who owned a hedge once wrote me that the remains of the enemy were on the bushes,

but never had he found the worm at work. His astonishment was profound when informed that the "remains" were living worms, house and all, the bags being carried about with them.

In the sandy soil of southern New Jersey the American arbor vitæ makes an ideal hedge. The soil suits it admirably. The growth is sturdy and healthy. At Hammononton, Woodbury, Vineland and neighboring towns, there are some pretty and perfect hedges of it. As Mr. Douglas says, it should not be planted in heavy soil, and this applies as well to all fibrous-rooted evergreens. JOSEPH MEEHAN.
Philadelphia.

The Greenhouse.**REX BEGONIAS.**

These begonias are propagated either from stem cuttings or leaves. When the latter are employed, those that are mature should be selected, removing the petiole (leaf stalk) and trimming away a portion of the margin at the base. Insert in sand, giving them an upright position to economize in space, and keep them well shaded until rooted. A cutting bed such as is used for roses will suit these begonias very well. I prefer to propagate early in spring, as the cuttings can then have the benefit of bottom heat with ample time to make nice plants for winter.

As soon as the cuttings are thoroughly rooted they should be potted, using a light, sandy soil which has been run through a fine sieve. They are then

placed on the benches of a low house in which they can be kept close and shaded for a time. Air is given more freely when they have taken a firm hold, but the atmosphere of the house must still be kept moist. The plants must be kept growing, potting them on as that operation becomes necessary. The soil may be made gradually coarser with each potting until in the final shift an unsifted compost of loam, leaf mold, well rotted cow manure and sand is used, adding a sprinkling of lime.

When the plants are thoroughly established and the pots well filled with roots, weak liquid manure may be given occasionally. In summer they need plentiful supplies of water at the roots, but a much smaller quantity will suffice in winter. Some growers recommend syringing the plants, but my experience does not sanction it. Sometimes it can not be avoided entirely, as for example, when they are used with palms and other decorative plants in the conservatory during the summer season. Even then I avoid wetting the leaves as far as possible, and keep the house shaded, with plenty of ventilation day and night. But the result will be different if the plants are regularly syringed and kept close at night; the leaves will then be damaged and numerous small holes will render them imperfect.

For decorative purposes I consider good specimens in pots of medium size the most desirable. The leaves of such plants hide the pots and they are certainly more attractive than older ones destitute of foliage at the base. The old plants, however, are useful for propagation. Begonias, I find, are subject to nematodes at

**BEGONIA MARQUISE DE PERLATO.**



BEGONIA DUTCHESS DE BRABANT

times. The trouble is said to be due to the use of old soil in potting. Where old soil must be used it should first be given a winter's freezing in a dry, open shed from which it can be removed at any time and thawed out as required. The addition of a little lime also helps as a preventive.

Among the best varieties of this section is Revolution, which takes its name, apparently, from the peculiar form of the leaves, a rather interesting feature, especially to amateurs. Marquise de Perlato is of very dwarf habit, producing numerous side shoots which are useful when it is necessary to increase the stock, as cuttings make plants more quickly than leaves. Another excellent variety is Duchess de Brabant, the large leaves of which extend over the pot completely obscuring it from view.

Ithaca, N. Y.

ROBERT SHORE.

CHINESE PRIMULAS.

This is a class of plants very easily cultivated, and also one of the most useful for florists' work. From seed sown the first week in April they can be had in bloom at Christmas and New Year's.

I find the seed germinates best in a temperature of 75° to 80°. I sow the seed in well drained pots, using a compost of loam and leaf mold with a little sand; a square of glass laid over each pot will prevent the soil from drying out too quickly.

The young plants should be left in the seed pots until they are large enough to pot off singly into 2-inch pots and then they can be put out in a cold frame and kept close and well shaded for a few days. As the pots become filled with roots give them a shift into 4-inch pots.

The next and final potting is into 6-inch pots, using a good, rich soil consisting of two parts loam to one each of well decayed cow manure and leaf mold, with a small proportion of sand. I also add a 5-inch pot of bone meal to each

barrowful of compost. After the final potting the plants are plunged in coal ashes and given all the air possible, only using the sashes on them in case of rain. They will need shading through the hottest part of the day. Water carefully

until well rooted; afterwards a little weak manure water will help them. I leave them outside in the frame until the end of September, after which they are removed to the greenhouse and placed on a shelf near the glass, keeping the house at a temperature of 45° to 50°.

WILLIAM THATCHER.

Brookline, Mass.

CINERARIA CULTURE.

The cineraria is one of our most useful and ornamental greenhouse plants, and under good cultivation will pay well for the extra care. Seed of a good strain is the first and most important requisite. We generally make two sowings, the first about the 10th of July, the second about the 15th of August; if sown much earlier the hot weather is hard on them and they do not make such fine plants as when sown at the above times. The seed is sown in a fine mixture of soil, leaf mold and sand, covered slightly, then placed in a cool corner of the greenhouse and kept shaded from bright sunlight.

When they show their first character leaf we transplant into flats one inch apart, and on their development to such an extent that they become crowded, we pot them in 2½-inch pots, from those to 4-inch, giving good drainage and using good turfy soil, leaf mold and well rotted cow manure, with a good sprinkling of sand.

When transferred to 4-inch pots we plunge them in a well ventilated pit or frame shaded from the direct sunlight. The plants are grown in a frame as long as the weather will permit. When the pots are well filled with roots the plants should be shifted into the 5-inch or 6-inch sizes, in which they may be flowered, unless specimen or exhibition plants are desired, in which case they should be



BEGONIA REVOLUTION.

given plenty of drainage and a richer soil potted on and finished in 9-inch pots. When the pots are well filled with roots give manure water once a week—not too strong at first, gradually increasing the strength as the plants become used to it.

As it is some risk to leave the plants in a frame after November we move them to a greenhouse which is kept at a night temperature of 40°, with a rise of 10° to 15° during the day. We syringe once daily until they show flower buds, which will be in January and February.

Give good ventilation, avoiding drafts, and do not allow the plants to touch, so that there may be a good circulation of air around them. The greatest enemy of the cineraria is the greenfly, but by fumigating with nikoteen once a week we keep them clean. D. F. R.

CHRYSANTHEMUM NOTES.

Preparations should now be made for giving the plants in the benches liquid manure, and this we consider one of the most important operations connected with chrysanthemum culture. The main point is to have the plants and soil in proper condition at the time of applying the manure. We have found that when the plants are growing vigorously, and showing that greyish tint of the young foliage which is peculiar to healthy stock, they are in the right condition to receive stimulants if they are judiciously applied; that is, not to have the liquid too strong to start with, but to use it mild at first, increasing the strength gradually. At every stage the plants must be watched carefully in order to avoid carrying the application of manures too far. One can very soon tell when a plant has been given all the feeding it will bear, from an examination of the foliage. If it is at all brittle the supply of food must be reduced, not all at once but by easy stages.

Most varieties will need but little stimulant before the buds are set, except early propagated stock, which we feed lightly about three weeks before they set the bud, ceasing the application at the time the bud is forming, as the plant is then practically at a standstill. At this time, and till the bud can be seen plainly above the top leaves, we aim to keep the beds a little on the dry order. Of course there are varieties which have to be treated differently. For example, it is not to be expected that small foliaged sorts like Ivory, Golden Wedding, E. Dailedouze and others of that order, will require the same quantity of stimulant as vigorous growers, like Mayflower, Sunstone and Mrs. Jerome Jones. Again, most of the red varieties should receive but little liquid manure after they have formed the bud or they will be sure to burn on the petals.

It is impossible to prescribe any rule that will be applicable in every instance, as the strength and quantity of the manure must be determined by the soil conditions, and this knowledge is only acquired by long and careful observation.

There is one point in applying stimulants on which all chrysanthemum growers agree, and that is doing it in as little time and as cleanly as possible.

We use fifty-gallon barrels to hold the preparation and do not stick to one kind of manure but change it at every application, using about a bushel to a barrel of water, allowing it to stand a few days before using. We prepare several barrels of a mixture consisting of an ordinary bucket of bonemeal and the same amount of soot to a barrel of water and let it stand from three weeks to a month before

applying. We have found this an excellent aid to fine texture, both in foliage and bloom, and use it twice during the season. At the time the plants are able to assimilate the strongest stimulant we use a 3-inch pot of nitrate of soda with every barrel of the compound. This is applied through a Kinney pump, which dilutes the strength one half, so if cans were used we would figure accordingly.

It is getting along now toward the time when we should be on the lookout for the buds that are to be retained, and they should be taken or selected before the side shoots have an opportunity of drawing upon their vitality by absorbing the greater part of the nourishment given to the plants. When the lateral buds and shoots are large enough to be rubbed out without damaging the center bud, they should be removed.

We are taking buds this week of some varieties, the plants being from early propagated stock, and in most cases the buds now in process of formation are second crowns. Care must be taken to see that the buds are perfect in form; if the center bud is not perfect it should be removed and one of the side shoots retained to furnish another.

The variety Midge is the first one to form the bud with us and we find this early bud the best one to take, the next not making nearly so fine a flower. We have no trouble with weak necks in this variety, the bloom hardly getting above the foliage. Geo. S. Kalb is also setting the best bud to take, but care must be used with this one as we find it has a tendency to come blind. Yellow Queen from early stock is also showing the bud, but with June struck stock it is best not to take the bud until about the 1st to 10th of September. We also take the buds of Mrs. Jerome Jones as they come along now, the early buds making the largest and fullest flower and come pure white, while the later ones come mostly pink. Like Midge, this variety gives no trouble with the neck.

We also notice buds forming on Mayflower, Modesto, Mrs. Caton, Henry Hurrell and Ivory. The following are best from the terminal buds: Maud Dean, Viviand-Morel, Mrs. Martin A. Ryerson, Mrs. J. J. Glessner and Defender.

At present writing we are having a spell of hot weather with very heavy dews at night, which, with the full ventilation given, cause a damp atmosphere inside. We therefore discontinue syringing late in the day so as to have the foliage dry at nightfall.

Specimen plants need to be staked out now and they should have plenty of water with an occasional dose of liquid manure. If the roots show at all on the surface of the soil, they need a mulch of well rotted manure. Single-stemmed plants should be in their flowering pots by this time; and staked up as soon as large enough; they need a light place near the glass and when pot-bound a little liquid manure may be applied.

C. W. JOHNSON.

Just at this time all of the old and a few new ideas in staking are brought out for the guidance of young florists and the assistance of some of the older hands who may be ambitious to improve on their former methods. I have tried for several seasons a simple idea which I find works nicely. Use a cane stake about half to five-eighths of an inch thick and have it at least as high above the pot as your plant may grow. Paint a dark green color and stick firmly as near the center of the pot as possible without injury to

the roots of the plant. Use no string of any kind for tying except, perhaps, a piece of raffia near the pot to make the main stem firm. Have a lot of straight pieces of galvanized wire about the size of a knitting needle and a sharp bradawl the same size as the branches of the plant; pierce the cane horizontally, being careful not to split it, and insert a wire reaching to the extreme diameter of the bush. With a pair of wire nippers cut the wire about an inch from where you wish your flower stem placed and bend a loop in the end of it a little larger than the stem. Spring this open and around the stem. Choose a shoot on the opposite side of the plant and hold that in position with the other end of your wire. Any number of wires can be passed through your stake. You will find the friction of the wire in passing through the cane will be sufficient to prevent its moving laterally, and the slightest bend of a wire, even after the plant is in bloom, will hold a flower just where it is wanted. In a plant of good foliage the wires will be invisible, and the stake can be cut off just below the foliage, when the plant has attained its growth. F. P. DAVIS.

SELECT FERNS.

One of the most distinct and beautiful of the large fronded maidenhairs is *Adiantum Peruvianum*, which requires stove treatment. Raised from spores and potted in a compost of loam, peat, and leaf-mold, with plenty of sand added, it grows freely. The matured fronds are of a deep green, which makes a good contrast with the young ones, these having a soft bronzy tint. Though not yet grown for market purposes I believe if well done many of our florists would use it for specially choice work, as next to *A. Farleyense* it is the most effective of the adiantums.

Acrostichum drynarioides is one of the most distinct ferns we have. I believe I have previously alluded to this as one which may be raised from spores. It takes a considerable time to establish plants large enough to bear the fertile fronds, which add much to its beauty. It is a native of the Solomon Islands and Penang, and succeeds best in a stove temperature, with plenty of pot room and a rough, porous compost. Grown in a suspended basket it makes a fine specimen.

Davallia Assamica is a very distinct species with fronds from six to eight inches long and two to three inches wide and of a dark bronzy green color. The rhizomes, spread freely and are covered with silvery grey scales, changing to a darker color with age. It makes a fine basket fern and may be readily increased by division, but I have not yet seen a batch of seedlings. The plant was accidentally introduced among an importation of orchids a few years ago, at which time I believe there were no other living specimens in cultivation.

Platynerium alaicorne majus differs from the type in having broader fronds. The basal or shell-like fronds are also much larger. Grown on cork it makes a fine ornament for the wall. I think the platyneriums ought to come into more general use for decorations. They may be hung on pedestals or against a wall and are most attractive. When exhibiting ferns I find these always attract much attention, and as they last so well in a dry atmosphere they may be strongly recommended. A. HEMSLEY.

PERENNIALS and annuals will keep on blooming much longer if all faded flowers are removed.

Miscellaneous.

RUST OF GARDEN PINKS.

The garden pinks (*Dianthus Species*) are sometimes badly rusted. Not long ago, while in a commercial garden, the writer was impressed with the bad condition of the various sorts of pinks. The engraving shows, nearly natural size, three leaves that were then gathered. This rust while affecting the whole leaf and causing it to lose its green color, develops conspicuous circular patches of pimples. There are two of these patches upon the under surface of the leaf to the left hand, three in the middle and one upon the right hand leaf. A careful inspection of the clusters will show that the pimples are more or less in concentric circles, giving a peculiar appearance and one that does not admit of an easy explanation.

In connection with this rust there frequently arises the question of its identity with that upon the carnation. The pinks and carnations are very closely related, but here is a case where the fungi attacking hosts of the same genus are widely separated. To the naked eye the rust of the pinks and carnations resemble each other even to the circular arrangement of the pimples above noted, but here the likeness ends for with the compound microscope the fungi are seen to be so unlike as to belong to different genera. That of the carnations is *Uromyces caryophyllinus* Schr., while the pink rust is *Puccinia arenariae* Schm.

It is therefore a pleasure to assure all interested in the question that while both are genuine rusts and flourish upon hosts that are as closely related as cousins, so to speak, yet they are not propagated the one from the other. The rust of the pinks is an old enemy in this country and has a wide range of plants upon which it grows, both cultivated and wild, as the sandworts, chickweeds, corn cockle and sometimes the bouncing Bet.

Because of its wide range of hosts, some of them being common weeds, there is but little hope of extermination. The two points here being to give information upon a pest of the ornamental grounds and secondly to assure those who may have it that their carnations need not be expected to contract rust from other plants of the pink or any other family.

BYRON D. HALSTED.

AN UNSOLVED WATERING PROBLEM.

Not long ago when a group of gardeners and florists were chatting together, the question of taking the chill off water in the winter before using it upon plants was discussed. The consensus of opinion was to the effect that it seems natural that water with the "chill off" was more congenial to plants growing in a temperature of not less than 56° at night, yet everyone present acknowledged that no comparative tests had ever been made to their knowledge, in order to prove the matter, one way or the other. One grower in relating his experience made the statement that he had only used water one season that had undergone the process of having the chill taken off, and during that whole season he had more red spider on the plants in his houses than he had ever had before or since in one season in an experience extending over some twenty-five years. He admitted, upon cross-questioning, that he would not like to blame the warmer water for the flour-

ishing condition of the red spider, but rather that the men who had the manipulating of the hose were most at fault; yet he adhered to the idea that possibly growers paid more attention to the sentiment of the matter of warm water than to its practicability.

The temperature of water is deceptive. In my immediate locality wells are of varying depth, because some are dug wells while others are drilled, and every quencher of his thirst in summer time generally makes remarks as to the temperature of the water he is drinking. One of the oldest inhabitants, when imbibing at a drilled well last summer, stated that it was good water, but was not as cold as that from his own—a dug well. One investigator present at that time desiring to find out as far as possible how nearly



RUST OF GARDEN PINKS.

our ancient friend was from being correct, secured a thermometer and in testing the water of the drilled well whence the water being drank was obtained, found that it registered just 56°. He tried several wells carefully in the neighborhood during the same day, both drilled and dug, with the same thermometer, and he found them all 56° without variation. My contention is that when water can be delivered to the plants not colder than 56° there is no necessity of going to the expense of making it warmer, as no injury can possibly result from administering water to plants that is no colder than the temperature, or at most a few degrees less, than that to which the plants are subjected at night.

There are various methods of securing water supplies. No plants were ever grown better than were those of former generations, when the water used was caught from the roof and stored in cisterns inside the greenhouse where the water contained therein is almost certain to be about the same temperature as the atmosphere of the greenhouse in which the cistern is located. The success attained by our forefathers was attributed, however, more to the rain-water used rather than the temperature thereof. In modern greenhouse establishments, be

they commercial or amateur, the water supply has to be more systematically provided for; sometimes it is a windmill and a tank with ample capacity; at others some power more readily controlled is brought into service than the wind, such as steam, hot air, or electricity; but the best of all, when obtainable, is that furnished by a corporation or a municipality, if not too high in price. In most of the above methods, it is true, the temperature of the water is not readily controlled unless by a system of warming accomplished according to some primitive mode, or by the more up-to-date processes of the present day, which are in successful operation in different parts of the country.

The question is, At what temperature does water do injury to plants growing under glass? Peter Henderson said in effect in his "Practical Floriculture," if my memory serves me correctly, that no evil resulted from the use of cold water upon plants growing in greenhouses, claiming that it is not necessary to warm it before use in sprinkling the leaves of the plants or watering them at the roots and stating that in a very short time it will attain the same temperature as the greenhouse in which it is used. If experiments have been made, along these lines, and positive knowledge is in the possession of some good soul, I am sure there are numerous florists and gardeners, both old and young, who would receive the results with gratitude through the columns of your popular floricultural paper.

E. L.

AMERICAN SEED GROWING.

Apropos of Prof. Waugh's remarks in reference to want of uniformity among plants of new varieties I might mention my own experience the present season with a new pansy. The seed was supplied by one of the foremost seedsmen of the United States, with the object of securing a suitable name for the pansy from among those suggested by the growers of the variety. In the description it is said that "the coloring in this variety is a marvel of richness, velvety garnet, bright red and golden yellow indescribably blended." I secured twenty-seven plants from the package of seed and all of them are now in blossom, yet no two in the entire lot have flowers exactly alike. In most of them "velvety garnet, bright red and golden yellow are indescribably blended," but in one the two upper petals are a uniform light garnet, while the three lower are a very dark garnet splashed with yellow; in a second the two upper petals are yellow with pencillings of garnet and the three lower, garnet shading to a yellow margin, while in a third all the petals have a reddish ground-color with pencillings and shadings of black. Almost any one of the different forms is worthy of a place among pansies but the difficulty is that the type has not as yet been "fixed" and a grower sowing the seed from any of them, would have no certainty what color the flowers on the resulting plants would be. The originator should have continued several years longer to select seed from flowers which came nearest to his ideal and then there might be so little variation that it would be possible to suggest a suitable name. The only name that I could now propose which would be in the least appropriate would be "The Pied Piper," and even that would have to be put in the plural, "The Pied Pipers," in order to cover all the variations of coloring.

F. C. SEARS.

Wolfville, Nova Scotia.

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ASK ANY QUESTIONS you please about plants, flowers, fruits, vegetables or other practical gardening matters. We will take pleasure in answering them.

SEND US NOTES of your experience in gardening in any line; tell us of your successes that others may be enlightened and encouraged, and of your failures, perhaps we can help you.

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THE Texas State Horticultural Society has catalogued 201 named varieties of peaches grown in the Lone Star state.

WHEN your delphiniums are through blooming, cut them back to the ground. They will soon break out at the roots and bloom again this fall, but not as strongly as during their earlier effort.

WE are in receipt of the Monmouth County Horticultural Society's list of premiums to be competed for at an exhibition scheduled for Wednesday, August 31 and Thursday, September 1 in the Casino, Rumson Road, Sea Bright, N. J. H. A. Kettel, Sea Bright, N. J., is secretary of the society.

EDWARD C. REID, secretary of the State Horticultural Society, states that the apple crop of Michigan will be neither a large nor a good one, although it will be in excess of that of any state east of the Rocky Mountains. Pears and plums are abundant, but the crop of peaches will not exceed fifty per cent.

JOHN BEIMFORD, of Wilton Junction, Iowa, writes to suggest that bisulphide of carbon be tried as a remedy for the disease brought upon Harrisii lily bulbs by mites. He is of the opinion that this preparation should be effective, and believes that it could be applied cheaply and without injury to the bulbs. About a year ago Mr. A. F. Woods, of the

Department of Agriculture, advised the use of hydrocyanic acid gas, but so far no information has come to hand in demonstration of its utility for the purpose specified.

THE recent mention in GARDENING of the new *Clematis coccinea* hybrids, calls to mind another hybrid of decided merit, namely *C. integrifolia Durandi*. It is even more of a departure from the type than the hybrid *coccinea* hybrids, as the flowers are as large as the ordinary *C. Jackmani*, of a dark blue color at first, fading into a light blue. *C. integrifolia* is a bush form growing about two feet high. The *Durandi* form grows about four feet high, and while vine-like in habit, does not twine, nor has it tendrils, and therefore requires tying up. It has been in bloom over three months and perfectly free from disease.

DAHLIAS, planted according to instructions in the Dahlia Society premium list, stood up during the recent storms, which were so severe that field corn was laid over. They were not staked. Holes were dug deep enough to allow the roots or tubers to be set in, so that their tops were about six to eight inches below the surface, filling in three inches of soil. When the shoots appeared all but the strongest were removed and the tips of the latter were pinched out. This caused side shoots to appear, four of which were allowed to remain. When these appeared above the surface the soil was filled in level. This packed around the junction of the branches with the stem and held them securely against cold and rain, no staking being necessary.

THE WEATHER AND THE CROPS.

TEMPERATURE.

The latter part of August has been warmer than normal over almost the entire country. In the middle Rocky Mountain region the maximum temperature was 104° and in the interior of California it exceeded 100° for several consecutive days. The only districts to enjoy freedom from the abnormal heat were the northern Pacific coast and the upper lake region.

PRECIPITATION.

Less than the usual amount of rain fell upon the greater portion of the country. That section west of the Mississippi received no appreciable rainfall except in Dakota and Iowa. In the south Atlantic states the weekly rainfall was from two to six inches and it was nearly as heavy in Ohio, Indiana, Illinois and the central gulf states.

THE CROPS.

The conditions in general have been favorable to crops, although in the west the hot, dry weather has had its injurious effect. Corn and wheat are in excellent condition the country over, but in many of the fruit districts the crops are only fair and in some instances are poor. On the Pacific coast conditions are unusually favorable for fruit drying. Local storms have proved very destructive in North Dakota, Minnesota, Iowa, Illinois, Ohio and Pennsylvania.

SUBURBAN HOME GROUNDS.

Charles N. Lowrie, landscape architect, read the following excellent paper at the second annual convention of the American Park and Outdoor Art Association:

In the fifty years that have passed since Andrew Downing pleaded so eloquently the cause of public parks for America we have made such advances that we now

outrank other countries in the number established, and in the ability displayed in the majority of cases in their design and development.

Long before parks were advocated or even needed, New England and the banks of the Hudson, in the old days before the growing up of the great cities, possessed many towns in and near which dwelt people of polite cultivation and polished manners whose sober but stately mansions still remain; substantial buildings, often with a court yard and high wall after the English fashion, and a large degree of breadth of landscape setting and excellence of general design.

Along with these, and much more numerous, was the type of colonial home, not changing greatly for many years, and good examples, still well preserved, are to be found from Salem to Annapolis. The house, simple and plain, with hardly anything to relieve it except a cornice, but well proportioned, substantial and home-like; set near the street in a good sized lot with prim, box bordered, straight walk to the front door. At the rear of the house and sometimes to one side a stretch of quiet secluded lawn surrounded with fence, shrubbery and vines, with a garden full of old fashioned flowers, fine fruit trees, a plot for vegetables and small fruits.

These old places are historically interesting, and worthy of mention here as containing suggestive features adaptable to our present needs.

Before considering, however, our present needs it will be well to look at our condition and surely we have an interesting situation before us.

With the rapid expansion of material welfare and the phenomenal results of new inventions our ways of living have greatly changed. Cities are growing much more rapidly than the country districts and a large number of the well to do and those in comfortable circumstances are finding their homes in the outlying parts of the town or in easily accessible suburban sections. They are building attractive homes in many cases representing the highest type of semi-rural architecture so far attained.

We see, then, that great advance has been made in park making and house building. The treatment of home grounds seems to have lagged somewhat behind. There is truth in Bacon's lines: "A man shall ever see, that, when ages grow to civility and elegance men come to build stately sooner than to garden finely; as if gardening were the greater perfection."

The general practice is to buy a lot with from seventy-five feet frontage to several hundred, and then to clear away everything from the land that nature has placed there, and starting from the bare ground proceed to create a lawn, dot evergreens over it in an inconsequential way leaving suitably conspicuous open places in the carefully created lawn where chromo like flower beds are cut, and setting as many novel vivid and curious plants as possible in inharmonious contrast with the evergreens and flowers. This means ostentation and inappropriateness and shows the undue value put in this branch of art, as in all others, upon results which evince the expenditure of much money. The most ignorant or careless person sees that wide, carefully tended lawns, gaudy flower beds, numbers of odd or exotic plants, represent considerable outlay, and often he is charmed by the mere perception of this fact; just as the owner is charmed by the thought that it is easily to be perceived on his place. Those with truer percep-

tions, from continuous observations of nothing better, are blinded to the essential ugliness of it all. This result is as surely attained in the small door yard as in the large estate, and the means employed much the same only on a smaller scale.

Another possible reason for this departure from nature's methods, as someone has aptly pointed out, is a prevalent idea that there exists an eternal antipathy between nature and art and between the qualities they typify. These terms truly are correctly used in contrast. The best work of art lacks certain qualities which delight the eye and kindle the imagination in a work of nature, and on the other hand, the most impressive work of nature lacks that evidence of human intelligence exerted, of difficulties overcome and ideals achieved which so powerfully interest and charm in a work of art. The artist cannot imitate nature any more than nature can copy art and until this fact is recognized we cannot really appreciate the distinctive charm of either.

Many people say, "We are lovers of nature," and demand of the landscape designer that he be a literal translator, and deny his right to use the transforming power of imagination in constructing scenery. Others say, and they are in the majority, "We are lovers of art." They are willing that a painter dispense with good drawing, natural color effects, local schemes of light and shade if he thereby secures some striking result, and they call his work artistic in proportion as it deviates most from the models offered by the natural world.

The latter canons of taste govern in the domain of gardening more frequently, for we have reached a mental development where we all wish to be artistic. The display of expenditure for its own sake, the excessive use of striking vegetation gives us results more along these lines than do those developed more closely after the suggestions of nature.

The result is a monotony of treatment than which not even the formal gardens of the time of Louis XIV were more alike in general character than those of America. And this fact alone should show us that we are on the wrong track. No two natural landscapes are alike and in short distances we find many very unlike in general effect and detail. The essence of all natural beauty is distinctness of character. This brings us to our first point in the successful arrangement of home grounds. Before a structure is erected, a path built or a tree planted study to discover the distinctive feature of the place. It must be strong enough to be worth emphasis in order to be interesting; but there are few places of any size so dull and characterless as to have no individuality. It may be a distant prospect, a stretch of woodland or simply a pleasing sweep of surface or a noble tree.

Having chosen this commanding feature all development should be conducted in harmony with it.

If it is a distant prospect all else should be subordinated so that the attention be not distracted. Strong foreground in the way of an occasional tree or massive shrubbery may serve by contrast with the dim lines beyond to add depth and mystery to the distance, but there should be nothing trivial or in the nature of trifling ornament to intercept attention from the distant view.

Where outlook is lacking, good effects can be had where sufficient room permits by variation of surface, increasing the elevations and the depths of depression,

by carefully managed shadows, by paths vanishing mysteriously behind thickets.

But whatever the arrangement there must always be this central motive and such details may, from time to time be added as the growing picture suggests. Time spent in such study is a continual pleasure; every woodland walk, every tangled roadside thicket, every river bank has its suggestions for new combinations and the world becomes a vast sketch book full of designs by the greatest of artists.

The second point, which has already been hinted at, is the necessity of adaptation to need as a primary requisite. The refusal to use foresight and to plan out beforehand is to invite failure from the start.

We have learned pretty well the necessity of planning in building our houses and the same principal obtains in landscape designs. Using the word in its widest sense, William Morris says, "Architecture is a great subject, truly, for it embraces the consideration of the whole of the external surroundings of the life of man; we cannot escape from it if we would for it means the moulding and altering to human needs of the very face of the earth itself." The fulfilment of need will insure true beauty.

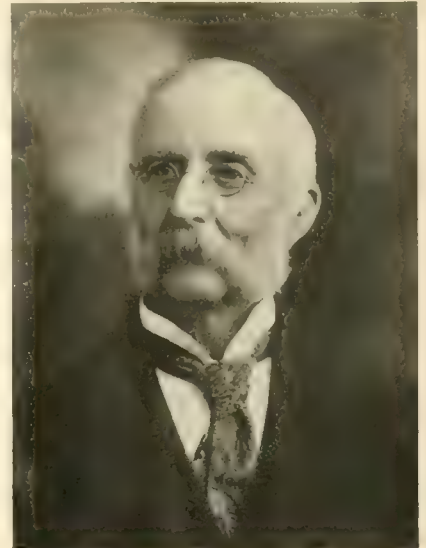
Considering, now, some of the practical questions growing out of these principles, perhaps the point at which we can make most improvement is in the matter of more seclusion in our home grounds. We are not quite ready to adopt the English way of completely excluding the public with a high wall or hedge thus depriving the public of the pleasure of seeing us and our place, and from taking a wholesome interest in our affairs. But some of us could enjoy privacy and home life besides.

For the small place we can get our lesson from the old colonial homes. By locating the house nearer to the street and close to one of the side lines, and partly concealing it with shrubbery or not too high growing hedging on the street line. In this way we get a good plot at the rear and perhaps on one side, which we can border thickly with free growing shrubbery, vines and flowers and an occasional well placed tree, and have open space in the center for lawn.

In the choice of planting material "that is best which lieth nearest." If we confine ourselves to native plants, and those from climates similar to our own, we will not lack for variety; and if we largely avoid forms and colors that are unusual and striking we will go a long way toward securing harmony in the general effect.

And finally plant trees and shrubs that will give the greatest amount of beauty for the least amount of care; that will thrive despite the severe cold of winter and the long droughts of summer; and such flowers as will come up from year to year without the gardener's constant care.

The American type of suburban home grounds has yet to be evolved. When it does come it will excite the wondering admiration of even our English visitors. It will be created and maintained at comparatively little cost. It will make our towns continuous bowers of ever changing interest and charm. It will make of each home a truly homelike spot, attractive enough and individual enough to lay strong hold on the affections of the family and natural enough to foster their love for nature in her best forms, and yet protected enough to give them full opportunities for the development of united home-keeping domestic habits of life.



MORRIS A. HILL.

WORKERS IN HORTICULTURE, XVI.

The death of Morris A. Hill removes from our midst a man whose noble traits of character endeared him to all those who had the good fortune to know and to come in contact with him. Mr. Hill was born in Goshen, Conn., sixty-three years ago, and came to Ansonia in 1864, moving from Thomaston and entering the employ of the Slade Woolen Co. For a number of years he was thus engaged, and after the company went out of business he commenced growing a few flowers and plants, extending his operations from time to time until he had the largest and best equipped greenhouses in Ansonia. For fifteen years he had also been the superintendent of the Pine Grove cemetery, and the work done there in late years has been under his supervision. The landscape gardening and beautifying of the grounds proved him to be an artist of the first rank. A wife and five children mourn his death. The children reside at home, there being four sons and one daughter. The business will be carried on as heretofore by his heirs.

Fruits and Vegetables.

COMMENT CONCERNING CALIFORNIA.

I have just returned from my trip to the Pacific coast where I enjoyed myself very much and feasted on fruits and flowers to my heart's content. California has had an exceptionally dry season, but the flowers are blooming in great profusion and fruit seems to be abundant.

I called on A. W. Thompson, who has a large fruit ranch three miles west of Petaluma in Sonoma county. Mr. Thompson has several thousand apple, pear, plum, peach and cherry trees and says that apples and pears are the most profitable fruits to grow, especially in that locality. He is selling his pears at \$20 per ton. His summer apples, the Gravensteins, are just ready for market and bring \$40 per ton, while the Alexander only brings about \$30 per ton. Spitzenberg, Yellow Newton, Pippins, Sonoma Seedling, Greenings, Bellflower and other fall and winter varieties are in good

demand at about \$40 per ton. He thinks his Bartlett pears will yield him fully 500 pounds per tree and he has about 2,000 trees. They call this an off year on account of drought and late frosts. That vicinity is greatly troubled with the apple worm or codling moth and Mr. Thompson says that it would be worth hundreds of dollars annually to that vicinity if they could find something that would effectually destroy them. They have used salt lime, sulphur solution and Paris green, all without the desired effect.

Cherries and plums have not paid for picking this year. I saw both fruits so thick on the ground that I could not take a step in the orchards without stepping on them and in places the plums were four and five deep so that one could have shooved them up by the carload.

I visited Mr. Burbank, at Santa Rosa, and found the most interesting man that I met on the Pacific coast. He is to fruits and flowers what Edison is to electricity and his new plum is one of the most delicious that I ever tasted. His yellow calla lily is a beauty and he showed me a pure white tigrida, also a double marguerite and many other new things which were truly wonderful.

I called at the Lemmon Herbarium and found Professor Lemmon a very courteous and instructive gentleman. I passed a very pleasant evening among the pine cones of the west, for his rooms are covered with every variety of cone known and I brought away from his place a bulb of *Lilium rubescens*, a very rare and beautiful plant. E. E. KENNICOTT.

THE PEACH TWIG BORER.

This insect is described in a recent farmer's bulletin of the Department of Agriculture. It is said to be a serious menace to peach growing from its habit of killing the young tips of the branches and thus checking the growth. It is spreading to all parts of the country. The kerosene emulsion spray, however, effectually controls it.

STRAWBERRY GROWING IN NEBRASKA.

E. F. Stephens, of Crete, Neb., read the following practical paper on growing strawberries for market in Nebraska at the recent union meeting of the Nebraska and Iowa Horticultural Societies at Omaha:

Notwithstanding all that has been said regarding the growing of the strawberry and the effort our society has made to spread correct information and encourage planting I noticed with some surprise this summer that the markets of Lincoln and the principal towns west through the state were supplied to a considerable extent with strawberries from Hood River, Oregon, Utah and Colorado. As a rule I noticed that Oregon, Utah and Colorado strawberries sold in the various towns visited at from 10 to 12½ cents per quart.

While careless and improper methods have not yielded large returns in the growing of the strawberry in the hands of the average planter over a portion of the state by what is called dry farming, there has been developed in recent years in our state so many successful irrigation canals, covering about one million acres, that all of these minor fruits can be grown as readily in Nebraska as in Colorado, Utah or Oregon, since on this one million acres of lands already under irrigation we have soil equal to any which they have in the states above noted.

The waters of the Platte, the different forks of the Loup, and the Republican,

with their tributaries, are more easily led out into the valleys and lands bordering them than in any other state where irrigation is attempted. The water supply is quite certain, abundant in amount and very easily led out and applied.

Under these conditions we should, at least, supply our local markets and should cultivate and develop these markets until they use at least ten times as much small fruit as is at present consumed. When fruit can be obtained fresh from the planter in the best possible condition and only a few hours from the field, it will be consumed in much greater quantities, and likewise when abundant production brings the price down to one-half the prices now obtained for the small product now sold, the profits will yet be large and the consumption increased ten fold.

Under irrigation there is good profit in growing strawberries at \$1.50 per case for the local markets, which saves express charges and secures return of crates.

As an illustration of the rapid increase in the consumption of fruit under lessening prices, the Pacific Express agent at North Platte stated to me this season, that the reduction in price from \$1.75 to \$1.10 per case on peaches enabled him to increase the number of cases handled by his company and consumed in North Platte from about 300 cases annually to 2000 cases last season, all supplied by one grower at Ogden, Utah. This gentleman also stated that the consumption of strawberries in North Platte reached 1000 cases in a single season.

West of the line of Columbus I know of only one party growing the strawberry extensively for market, Throckmorton & Griffith, of Albion, who are growing more strawberries than any other parties in the state of whom I have heard, irrigating from Beaver Creek. West of these gentlemen I have heard of only one party who grows so much as an acre of strawberries. W. L. Park, superintendent of the North Platte division of the Union Pacific grew this season a scant acre of strawberries, from which he picked 4000 quarts, securing a net price of about 10 cents per quart, or \$400. This was Mr. Park's first attempt. With increased experience and a narrower and better list of varieties his men will no doubt secure much better results.

Avoid low wet ground and also lands strongly alkali. Choose rich, deep, loam soil, although the sandy soils will answer if heavily fertilized. Heavily manure with fine old manure on any soil, since on a crop which pays so much per acre as the strawberry, it pays to grow the utmost possible on each and every acre.

In preparing the soil plow and subsoil to the depth of fifteen inches, more if possible. In selecting land prefer that which has a very gentle fall, giving easier control of the flow of water as needed. Plant in rows 3½ feet apart and if the plats are so prepared that the center of the rows are a little above the general level there will be less likelihood of flooding the crowns of the plants in subsequent watering. Cultivation should be weekly or oftener, and watering may be needed once in two weeks. Always cultivate as soon as possible after watering.

In covering for winter use select hay rather than straw, owing to the liability of weed seed or grain in straw.

The only drawback or serious risk in the growing of strawberries in any quantity in any of the irrigable valleys of the state, is what we call the May freeze, to which we are liable. Accidental instances

in great number seem to show that if water can be turned on from the ditches on nights when a cold wave is expected, there is almost a certainty that the freeze will be prevented. In every case I have heard of so far where this was done, no harm resulted from the freeze.

Desirable points in the selection of varieties might be named in the following order: First, solidity and firmness; second, brilliancy of color or attractiveness in appearance; third, size. Flavor is of less importance.

In picking plan to grade the crop, putting only fruit of best quality in certain boxes; everything inferior in other boxes. Be careful to pick with stems on and without bruising. Employ only the best help, that will pick and grade exactly as desired. This secures the best possible prices for 80 per cent of the fruit. The remainder had better be sold at what it is worth than to reduce the price of all of it by being sold together. In our own experience this season our first-class fruit brought from 10 to 12½ cents per quart the season through. The inferior which was graded out and sold by itself brought us 8 cents.

If the market is near at hand and fruit can be taken directly to town no special care will be required for cooling. But if the fruit must be held twenty-four hours before it is consumed, or must be shipped ten to 100 miles or more it will be advantageous to be prepared with a chill room and cool the fruit carefully soon after picking, to be sure it is cool when it starts to market. If necessary to ship the fruit a considerable distance after cooling (and in cooling fruit remember it must be only cooled and not chilled or nearly frozen) the fruit will carry to market much better if each quart box is wrapped in a sheet of parchment paper, making almost air-tight packages. The size of the sheet suitable for this purpose will be 12x18 inches. When we have supplied our local markets with all they can be induced to consume we should then turn our attention to other and more distant markets. For this work Nebraska has unequalled advantages. The Union Pacific, Burlington, Elkhorn, Rock Island and other systems all run fast train service with refrigerator cars carrying our fruit east and west, north and south, giving us unequalled facilities for reaching distant markets as well as surrounding. Other communities have had to wait for refrigerator cars and fast freight lines until a large production of fruit brought such service. We have it already established at our doors.

Miscellaneous.

THE HARRISII LILY DISEASE.

In an official report dated July 13, Superintendent G. A. Bishop, of the public gardens of Bermuda, attributes the Harrisii lily disease to heavy manuring with farmyard manure, repetition of the crop upon the same ground, reduced vitality, bad selection of stock and in some cases insufficiency of plant food. These render the bulbs prone to attacks of fungi or soft rot. It is stated that when the fungi or rot has taken possession of the bulb its roots and base become rotten, after which it is liable to be attacked by the eucharis mite. Mr. Bishop is led to these conclusions by extensive investigations on the ground and he prescribes a course

of treatment in the full belief that it will, in the course of a year or two, restore the lily industry to its former prosperity.

THE DUTCH HORTICULTURISTS.

At the July meeting of the Dutch Horticultural and Botanical Society, held in Amsterdam, the floral committee made the following awards: First-class certificates to C. Kwint, for *Begonia tuberosa* fl. pl. cristata; E. H. Krelage & Son, for *Begonia tuberosa* fl. pl., Orange ball, *Begonia tuberosa* fl. pl., Souvenir de Pierre Notting, *Calochortus Gunnisoni* and *Petunia Sneeuwbal*; C. G. Van Dijk, for *Schubertia grandiflora*. Certificates of merit to E. H. Krelage & Son, for *Ageratum Blue Perfection* and *Helenium Bigelowi*; Botanical certificates to E. H. Krelage & Son, for *Calochortus obispoensis* and *Lilium elegans Alice Wilson*.

THE SEVENTEEN YEAR LOCUST.

Bulletin No. 14 of the Department of Agriculture treats very fully of the insect commonly known by the above name. It is not a locust but a cicada and its proper name is the periodical cicada. It seems, however, that the popular supposition as to its appearing every seventeen years is founded on fact and that this long period elapses between the laying of the egg and the appearance of the perfect adult, the insect living in the ground during its immature stages. It is only the adult which is seriously injurious and even the damage which it causes is not nearly so great as is commonly supposed. In some locations it may seriously injure young trees and nursery stock, but no material harm is done to florists even where the insects are very numerous and but little harm to large fruit or ornamental trees. A number of remedies are given none of which are entirely to be relied on or can be applied on a large scale. The English sparrow is said to feed on this cicada greedily and has practically exterminated it in many localities, aided by numerous fungi, insects and animals.

SOME CAROLINA PLANTS.

North Carolina has, from times unknown, enjoyed the distinction of being natural home of the greatest percentage of all the woody and herbaceous plants North America produces. This fact has been acknowledged long ago by planters and florists who are drawing freely upon its resources for their work, depending, however, so far especially, upon the western part of the state. So it happens that the central and eastern sections have been left in almost virgin condition. Under the shade of the longleaf pines, in the sandy loam and the muck of the creeks there are flourishing, however, many floral gems which have to be known, only, to be appreciated, and which will prove a boon to the florist and landscape gardener. My space here being limited I shall enumerate only a few of them at present.

Clitoria Mariana (butterfly pea) is a climbing or trailing representative of the pulse family. It has large, glossy trifoliate leaves out of the axils of which the large dainty light blue flowers appear in spring and will last through the whole summer. *Galactia glabella* (milk pea) is another climbing member of the same family. Its foliage is smaller but equally glossy as that of the above. In July the whole plant will be fairly covered with bright red blossoms. This very graceful climber of about four feet in height makes a

splendid show when in bloom. It ought to be very valuable for many decorative purposes. *Jatropha stimnosa* (spurge nettle) will be found very useful in landscape work. It has beautifully shaped and tinted leaves and produces flowers of the richest cream color all through the summer. Its only drawback is that the plant does not bear much handling on account of its stinging properties. Its roots are of a very peculiar cylindrical shape, about twelve inches in length and are said to be of good taste.

Lupinus diffusus (deer cabbage) cannot be overestimated for its soil-binding and ornamental qualities. It forms large tufts one to two feet in diameter, has silvery white, downy foliage and sends forth its masses of flower trusses of light blue or sometimes pinkish color in April and May. A field of *L. diffusus* in bloom offers a splendid sight. The cut flowers will remain fresh for quite a while. Who has not heard of the lovely pyxie, *Pyxidanthera barbulata*? Quite closely resembling a moss during the balance of the year, in early spring it is completely covered with innumerable tiny pinkish daintily fragrant blossoms which endear the plant to everybody. It succeeds best in very moist ground, being found originally along the edges of our creeks. *Zygadenus glaberrimus* is a very stately and grand representative of the lily family. Its large flowers are of a creamy yellow color and appear in July upon spikes from four to six feet in height. They last a long time whether cut or left on the plant and are very valuable for many decorative purposes.

OTTO KATZENSTEIN.

BULB GROWING IN THE NORTHWEST.

A lot of about 10,000 young-brood bulbs of different varieties of single tulips were shipped a few days ago from one of the Chicago parks to Fairhaven, Wash., where they, together with nearly 3,000 of one, two and three year-old hyacinths and tulip bulbs, imported from Holland, will be planted out on trial fields at Fort Bellingham, Everson and Welcome in Whatcom county. The culture of Holland bulbs in the above named region of western Washington has some time ago passed the point where further experimenting becomes necessary, as is fully proven by the pronounced success achieved during the past five years on the limited area of land devoted to the growing of hyacinths, tulips, crocuses, narcissi, lilies, gladioli, etc., by Geo. Gibbs on Orcas Island, C. F. Larrabee, of Fairhaven, and two other gentlemen—Messrs. Canfield and Bock, horticultural enthusiasts—who desire to locate these new trial fields at the points mentioned because the three Holland bulb growers who visited Whatcom county last May (W. Warnaar, L. Van Leeuwen and Harman C. Bartman) pointed out these localities during their brief stay as being especially favored with the right kind of soil for hyacinth growing, and because it is desired to convince the most skeptical that bulbs can be grown on the mainland of Bellingham Bay just as perfect and in every way equal to the best imported bulbs.

ANDREAS SIMON.

A SUGGESTION.

Like every other popular family of plants, phloxes are being raised from seed and the seedlings sent out as new varieties, whether or not they differ from those of previous years. Every season there are phloxes shown in Boston by different exhibitors that are identical in everything

but the name. We are trying this year over 160 varieties, having the newest and most distinct sorts from several collections, and shall try to pick out the most worthy, but it is a hard job and cannot be done in one season. We expect to keep back twenty-five or thirty varieties for trial next season, planting those most alike next each other, and shall quite likely reduce these to twelve or fifteen kinds.

Pæonies are nearly, if not quite, as badly mixed as regards names, and each season the differences in the new varieties are becoming less and less. Now that these two families are regaining their popularity we would suggest a similar trial for them, as was given the perennial asters, narcissi, etc., in England. Some central locality could be fixed on, to which plants of all varieties of these two families could be sent from all nurseries and private gardens where large collections are grown. One or more years could be given to each family, or each family could be tried in a different locality. The experiment stations could, perhaps, be made available. These trial collections would, we feel sure, be of great use and interest to many, and help to make the two families more popular. Other families could be tried as it became needful.

R. N.

Massachusetts.

THE FLORISTS' ANNUAL MEETING.

The Society of American Florists held its fourteenth annual convention at Omaha, Neb., August 16 to 19. It was the first time the organization has gone west of the Mississippi river and the attendance was all that could have been expected in view of the distance.

Mayor Frank E. Moore's welcome to Omaha was a model of felicity and was replied to in kind by E. M. Wood, Natick, Mass. The address of President W. F. Gude, of Washington, was a scholarly exposition of the accomplishments and aims of the society and the reports of Secretary W. J. Stewart, Boston, and Treasurer H. B. Beatty, Oil City, Pa., showed the organization to be in a prosperous condition, with a large and influential membership and a balance of \$1156.89 in cash. The various state vice-presidents presented brief reports outlining floricultural conditions in their several territories. They, one and all, see increased interest in flowers both among those who regard them from the sole view point of a lover of nature and among those whose sentiment is tempered by the commercial aspect.

There was a large and valuable trade exhibit and special committees brought to the attention of the society many important matters. The Nomenclature Committee was pleased to state that few cases of mis-naming or confusion of names had arisen during the year. In the few instances which had been called to its attention the following decisions were rendered, the first name being recognized as correct:

Chrysanthemums—Jeannie Falconer or Peter Kay, Miss Agnes L. Dalskov or Ivory Rose.

Fuchsias—Gracieux or Little Beauty.

Roses—Climbing Kaiserin or Mrs. Robert Peary.

The society refused to accept the recommendation of its Executive Committee in the matter of establishing a Department of Credit Information but acquiesced in the matter of organizing departments of Co-operative Purchase, Legislation, Arbitration and Claims. The Florists' Hail Association's report showed a prosperous year despite heavy losses

occasioned by severe storms and the Chrysanthemum Society of America promulgated the report of its secretary, Elmer D. Smith, of Adrian, Mich., naming forty-four new chrysanthemums disseminated in 1898.

The election of the following officers was practically unanimous: President, W. N. Rudd, Chicago, Ill.; vice-president, Philip Breitmeyer, Detroit, Mich.; secretary, W. J. Stewart, Boston; treasurer, H. B. Beatty, Oil City, Pa.

It was decided that the fifteenth convention should convene at Detroit in 1899.

The papers and their discussion, which formed a large part of the programme, were attended by a great deal of interest and were given a serious consideration which speaks eloquently of the practical value of the S. A. F. The essays read were: Trade Exhibitions, Their Value to the Florists' Business, by E. H. Cushman, Euclid, O.; A few Remarks on the Dahlia, by Lawrence K. Peacock, Atco, N. J.; Grafting Roses for Forcing Under Glass, by Robert Craig, Philadelphia; Improvement in Varieties and Cultural Methods, by E. G. Hill, Richmond, Ind., and Bulb Growing in America, by W. T. Massey, of the North Carolina Experiment Station.

Of greatest interest, from both the cultural and commercial points of view, was Mr. Craig's paper on grafting roses and it provoked a discussion prolific of points of value. The consensus of opinion was that Bride, Bridesmaid and Kaiserin roses grafted on Manetti are, under certain conditions, a marked improvement over those grown on their own roots.

Of interest second only to the rose discussion was the question of American grown bulbs which was introduced by Prof. Massey and which was particularly timely because of a splendid collection including three varieties of narcissi, two varieties of iris, three of Dutch hyacinths, crocus, yellow and white tulips, Roman hyacinths and four splendid bulbs of *Lilium candidum* grown at Orcas, Washington, by George Gibbs and shown in the trade exhibit, where they were awarded a silver medal.

The convention was one of many pleasures, not least of which was the great Trans-Mississippi Exposition, which came in for a generous share of attention. J. F. Wilcox entertained the society at his establishment at Council Bluffs on Thursday afternoon and other highly appreciated diversions were the President's reception, the reception at the Lininger Art Gallery, the lecture on Russia by Prof. F. W. Taylor, and the trip to Hanscom Park. The annual bowling contest for the Evans Challenge Trophy resulted in a victory for St. Louis, with 2466 points although Buffalo scored 2552 but was barred from winning by having a mixed team. Six cities were represented in the game.

Societies.

NEW MEXICO HORTICULTURAL SOCIETY.—Elaborate preparations are being made for the annual fair, to be held at Santa Fe September 7 to 9. Large exhibits are expected.

ELMIRA HORTICULTURAL SOCIETY. ELMIRA, N. Y.—R. R. Stockdale, H. N. Hoffman and John B. Reidy gave interesting talks at the August session. It was decided to hold a chrysanthemum show in November.

GRAND RIVER VALLEY HORTICULTURAL SOCIETY.—The summer meeting, July 26, was held at Harrington, Mich., and was largely attended. Hon. C. W. Garfield, of Grand Rapids, was the principal speaker.

ABILENE HORTICULTURAL SOCIETY, ABILENE, KAS.—This society was organized August 10 by the selection of R. Bradley, president, and, Charles Young, secretary. W. H. Barnes, secretary of the State Horticultural Society made an address.

GREENE COUNTY HORTICULTURAL SOCIETY, SPRINGFIELD, MO.—There was a large attendance at the August meeting at the home of John Y. Fulbright. There was the usual programme and fourteen premiums were awarded for the best displays of fruits and flowers.

MINNESOTA SOCIETY OF HORTICULTURE.—This organization is the largest of its character in the United States. It has over 800 members and the exhibit which it will make at the approaching state fair, unprecedentedly large, will completely fill the great Horticultural Hall.

NEW ORLEANS HORTICULTURAL SOCIETY.—The anniversary of this association was celebrated by a picnic at Grand Island in the Gulf of Mexico. The following officers have been elected: President, J. H. Menard; Vice-pres., Emile Valdejo; Treas., John Eblen; Sec'y, Dan Nensham.

MONTGOMERY COUNTY HORTICULTURAL SOCIETY, DAYTON, O.—Despite the fact that it rained almost incessantly upon the day of the August meeting at the home of John Seibenthaler in Harrison township, the attendance was quite large. There were many interesting discussions and an elaborate dinner.

OMRO HORTICULTURAL SOCIETY, OMRO, WIS.—The August meeting was made notable by a display of blackberries. Those upon the programme were Misses Edna Babcock, Mabel Hemp and Freeda Clark, Mesdames Jos. Treleven, L. Laiten, and Stead and Mr. W. Carter. Apples will be the subject for the September meeting.

GRAND RIVER VALLEY HORTICULTURAL SOCIETY, GRAND RAPIDS, MICH.—The meeting August 30, was at Burton Farm, the home of Chas. W. Garfield. There was a large attendance and a fine display of small fruits. "Common Sense in Fruit Harvesting" was the topic treated by President Joseph A. Pearce and discussed by Treasurer E. Chase Philips and others. Hon. R. D. Graham, N. W. Cook and William Rowe also contributed to the programme.

GEORGIA STATE HORTICULTURAL SOCIETY.—The twenty-second annual session of this society was held at Americus. Hon. P. J. Berckmans, for twenty years president of the organization, presided and read his annual address, a document containing much of value to southern fruit growers. Mayor Hixon welcomed the hundred or more members to Americus and John W. Wheatly addressed them on behalf of the fruit growers of Sumter county. Upon the programme were the essays of Professor F. S. Earle, of Auburn, Ala., upon "Nematode Rootrot Disease;" and "The Marketing of Vegetable Crops," by A. C. Oelshig, of Savannah, while A. W. Smith, of Americus, discussed the subject of "Seed Growing for Profit." Other members spoke briefly upon kindred topics of interest to horticulturists.

EAST TENNESSEE HORTICULTURAL SOCIETY.—The eighth annual meeting will be of three days duration at Knoxville, September 6 to 8. There will be a large exhibit of fruits and flowers a long, diversified programme has been prepared.

INDIANA HORTICULTURAL SOCIETY.—The summer meeting was held at Crawfordsville on August 11 and 12. The society was welcomed by the president of the Fayette County Society, and President C. M. Hobbs responded. Special themes of interest to horticulturists were presented on the first day by James Troop, of Lafayette; Miss Minnie Cohn, of Oldenburg; C. E. Newlin, of Irvington; D. M. Geeting, State Superintendent of Public Instruction; and A. W. Butler, of Indianapolis. On the second day reports were submitted by J. A. Burton of Orleans; C. M. Hobbs, W. H. Ragan and Granville Cowan, the latter of Muncie; and H. F. McMahan, of Fairfield.

MAURY COUNTY HORTICULTURAL SOCIETY, COLUMBIA, TENN.—Grapes were in profusion at the August meeting, held at the office of T. E. Gordon. Dr. Chisholm, of Spring Hill, displayed the following varieties: Roy, Giltedge, Brighton, Niagara, Delaware, Bustiburg, Empire State, Delaba, Northern Muscadine, Major Allison, Green Mountain and Eclipse. Many of these have been originated by the Doctor, which makes them of double interest. Mr. Sowell, of Andrews, showed Concord, Catawba, Ives Seedling, Venango, Niagara, Anna, Fox, Melrose and Giltedge. His Elberta peaches have a coloring that does not seem to develop on any other soil. Mr. Meroney, of Dark's Mill, exhibited grapes of the following varieties: Jerusalem Seedling (grown by him from seed brought from the Holy Land), Brighton, Niagara, Concord, Norton's Virginia, Hartford Prolific, Lutie, Ives Seedling, Moor's Diamond and Virgennes. Mr. Yoest exhibited Herbert, Brighton, Etta, Wilder, Montiflore, Massosoit and Niagara. His Elberta peaches measured eleven inches in circumference, which were the largest shown. R. A. Spellman resigned the secretaryship of the society and was succeeded by C. P. Snell.

CATALOGUES RECEIVED.

J. M. Thorburn & Co., New York, N. Y., bulbs; Mrs. Theodosia B. Shepherd, Ventura-by-the-Sea, Cal., seeds, plants, bulbs; J. H. H. Boyd, Cagle, Tenn., tree seeds; W. J. Hesser, Plattsmouth, Neb., palms.

J. C. Schmidt, Erfurt, Germany, florists' supplies; Herb & Wulle, Naples, Italy, bulbs; Henry F. Michell, Philadelphia, Pa., bulbs and seeds; Kromer & Thieme, Rio de Janeiro, orchids; Wm. F. Kasting, Buffalo, N. Y., cut flowers; Hulton & Hunkel Co., Milwaukee, Wis., cut flowers; Cincinnati Cut Flower Co., Cincinnati, O., cut flowers; Charles D. Ball, Philadelphia, Pa., palms; H. F. Littlefield, Worcester, Mass., wire; G. C. Watson, Philadelphia, Pa., mushrooms; The Walker Fertilizer Co., Clifton Springs, N. Y., fertilizers; Jos. Dixon Crucible Co., Jersey City, N. J., paint; Giblin & Co., Utica, N. Y., boilers; P. J. Berckman Company, Augusta, Ga., nursery stock; C. H. Joosten, New York, N. Y., bulbs; Friedr. C. Pomrencke, Altona-Hamburg, Germany, bulbs; John Peed & Sons, West Norwood, London, S. E., England, bulbs.

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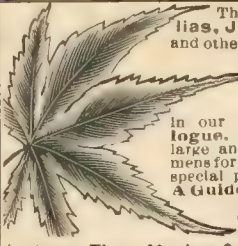
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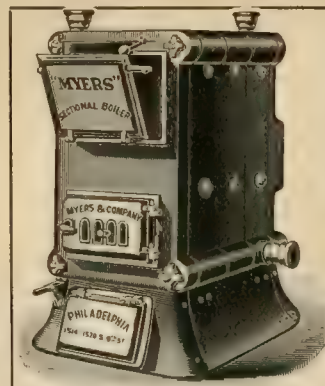
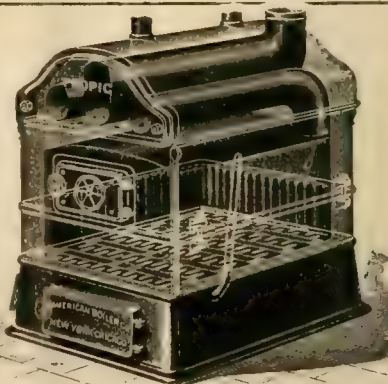
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